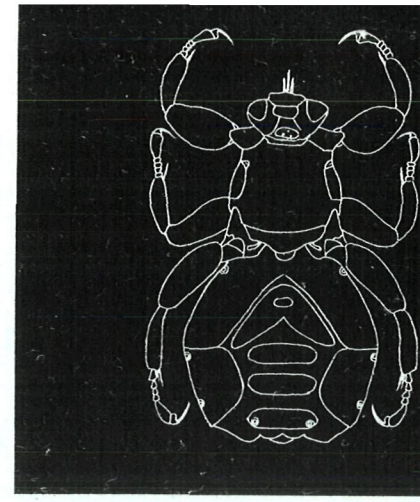

PACIFIC INSECTS MONOGRAPH 6

Genera and species of Hippoboscidae (Diptera): types, synonymy, habitats and natural groupings

By T. C. Maa

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GENERA AND SPECIES OF HIPPOBOSCIDAE (Diptera): TYPES, SYNONYMY, HABITATS AND NATURAL GROUPINGS[1]

By T. C. Maa

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Abstract: The Hippoboscidae of the world (published up to end of 1962) are briefly reviewed regarding nomenclature and interrelationship and allotted to 6 subfamilies and 19 genera (including *Struthiobosca* n. gen.), and 13 of the genera are divided into 42 species-groups. Synoptic keys to all these taxa are given and a re-interpretation of the original description of *Lynchia* is presented. As a result of re-examining about 88 % of the existing types, 25 of the 317 nominal species and infraspecies are suppressed as synonyms for the first time. The total number of accepted distinct species for the family is reduced to 130, including *Ornithoica curvata, O. hirtisternum, O. submicans, Ornithoctona rugicornis, Lynchia meda L. leptoptera*, and *L. modesta* n. spp. Meanwhile, 5 neo- and 48 lectotypes are selected, 10 new combinations suggested, and type localities of 26 nominal species fixed. The categories tribe, subgenus, subspecies, variety and forms are provisionally abandoned. All published names, including emendations, misspellings etc. are listed alphabetically with information about their types and status. The synonymic list of genera and species is arranged in systematic order and is incorporated with a summarization of their recorded habitats. Status of 8 of the nominal species is left undecided but their possible synonymy is suggested.

INTRODUCTION

As a small family of only about 120 "valid" described species, the Hippoboscidae have long been seriously plagued and heavily burdened with published names which, including variants in spelling, are more than 500 in number. The present paper represents an attempt to straighten out their status and to put them in a more natural order. The work chiefly involved the locating and re-examination of existing type specimens and the evaluation of diagnostic characters employed by previous authors. In some cases, it was necessary to fix the type locality or publication date, to verify authenticity of the type and to select a neo- or lectotype. Morphological, distributional and other notes on certain genera and species will be published elsewhere.

Admittedly the paper has many shortcomings and it is needless to add that much more work still needs to be done. Whether or not readers will agree with the views expressed

1. Partial results of the project "South Pacific Insects of Public Health Importance", supported at Bishop Museum by the National Institutes of Health, Bethesda, Md., U. S. A. (E-1723). Field work was partly supported by U. S. Army Med. Res. Dev. Comm. grant G65.

here, it is hoped that the presentation of the lists and keys in the following pages will prove to be not entirely superfluous. Criticism, suggestions, and information regarding the unexamined types and overlooked published names are cordially solicited. Before going into the lengthy lists, remarks on a few related points seem to be not out of place.

The Spellings. In the alphabetical lists, all generic and specific names are spelled exactly as they first appeared, including diacritical marks. The variants in spelling of the names are so numerous that the list of them is admittedly incomplete, and to save space, their original citations will not be given. Theoretically, emended names have nomenclatorial availability. But in many cases, they were not clearly indicated as such when first published. It seems better to leave open to question whether a variant in spelling represents an intentional emendation or merely a printer's error or an author's pen-slip. While many of the misspellings are nearly "harmless", some are very confusing for instance, *Anthoica* for *Ornithoica*, *Ceronia* for *Feronia*, *carolinensis* for *canariensis*, *cryptocephala* for *erythrocephala*, *expressa* for *impressa*, *fusca* for *fulva*.

The Synonymy: Insofar as the genera of Hippoboscidae are concerned, there is not much of a problem with their synonymy and type designation. Their type species are mostly available in larger museums. However, the type of *Lynchia*, the largest genus of the family, is unfortunately a dubious species. The authorship and publication date of *Olfersia*, another important genus of the family, is also to be questioned. The synonymy of the species, however, is much more difficult and complicated. Generally, it can be established by re-examining, when available, the type in question. In Hippoboscidae, this has been done previously by Speiser (1902 etc.), Austen (1903), Ferris (1922, 1929) and Bequaert (1954 etc.) but a large proportion of existing types have been left aside. The ascertaining of the authenticity of certain types and the selection of lectotypes (particularly when the type series is composite) and neotypes have been also neglected. The inadequate preparation and preservation in most types lead to still another difficulty in critical re-examination. To prove or disprove the authenticity of certain types (the old ones in particular), I have endeavored to provide detailed data. And, to avoid further confusion and misinterpretations, a number of lecto- and neotypes were selected. In cases where the types are non-existent or otherwise unavailable, I follow the conventional interpretation as generally accepted unless there appears to be strong contradictory evidence.

The Misinterpretations: Published records resulting from wrong identification or interpretation are not uncommon in the literature on Hippoboscidae. Some of them are apparent and can be properly placed in synonymy, but others require re-examination of the original material in question. Those mentioned in the alphabetical list are far from complete and merely serve as examples to show how confusing and chaotic they are. For simplicity, misinterpretations are not included in the synonymic list.

Acknowledgement: I gladly record my gratitude to many fellow entomologists for their friendly interest and generous assistance with this work. For the kindness and courtesies in allowing me to examine types in their collections and in providing information and working facilities during my study tour, thanks are due particularly to the following: Mr. J. E. Collin of Newmarket, England, and authorities of the National Museum at Washington D. C.; natural history museums at Budapest, Genova, Leiden, London, New York, Paris, Stanford University, Stockholm, Stuttgart and Wien; zoological museums at Amsterdam, Berlin, Firenze, Helsinki, Kφbenhavn, Milano and Torino; the California Academy

of Sciences, Deutsches Entomologisches Institut, Museum of Comparative Zoology at Harvard University, Hope Museum at Oxford University and Macleay Museum at Sydney University.

I. ALPHABETICAL LIST OF GENERIC AND SUBGENERIC NAMES

A total of 42 generic and subgeneric names have so far been published for Hippoboscidae, not including a large number of variants in spelling and the genus *Leptopteryx* Zett. (preoccupied) which subsequently proved to belong to the Aphididae. Only 18 of these names are here recognized as representing distinct genera, all others are suppressed as synonyms although a few may be revived, when necessary, for distinct subgenera.

[*Alaphagus*]. See *Alcephagus.*

Alcephagus Gimmerthal 1845: 152, as new name for *Ornithobia* Meig. 1830 on grounds that the latter name was not appropriate. Misspelled or emended as *Alaphagus* and *Alcophagus* by some later authors.

Type: Same (since published as a n. name) as that of *Ornithobia, i. e., O. pallida* Meig. 1830 (=*Pediculus cervi* Linn. 1758).

Status: An absolute synonym of *Lipoptena* Ntz. 1818 which has identical (through synonymy) type-species.

[*Alcophagus*]. See *Alcephagus.*

[*Alfersia*]. See *Olfersia.*

Allobosca Speiser 1899a: 198, for 1 sp. (the type).

Type: *Allobosca crassipes* Speis. 1899, haplotype.

Status: Distinct and only genus of Alloboscinae.

Anapera Meigen 1830: 234, for the 2 same spp. as did Leach for *Oxypterum.* Proposed as n. name for *Oxypterum* Lch. 1817 on (wrong) assumption that the latter name was preoccupied by *Ocyptera* Latr. 1804 (Dipt., Scatomyzidae).

Type: Same (since published as a n. name) as that of *Oxypterum, i. e., O. kirbyanum* Lch. 1817 (=*Ornithomya pallida* Latr. 1812). Bequaert (1954: 162) directly designated *pallida* Latr. as type.

Status: An absolute synonym of *Crataerina* Olf. 1816 which has identical (through synonymy) type-species.

[*Anthoica*]. See *Ornithoica.* Not to be confused with *Anthoica* Rndn. 1861 (Dipt., Tachinidae).

Austrolfersia Bequaert 1953a: 284, for 1 sp. (the type).

Type: *Austrolfersia ferrisi* Beq. 1953, orthotype. Paramonov (1954: 285) wrongly listed *Hippobosca tasmanica* Wesché 1903 as type.

Status: Distinct genus of Ortholfersiinae.

[*Brachypteromia, -mya*]. See *Brachypteromyia.*

Brachypteromyia Williston 1896: 184, for 1 sp. (the type). Misspelled as *Brachypteromia*, *-pteromya*, *-ptomyia* by some later authors.

Type: *Brachypteromyia femorata* Wllst. 1896, haplotype.

Status: Synonym of *Myophthiria* Rndn. 1875. Accepted by some authors as a subgenus of the latter.

[*Brachyptomyia*]. See *Brachypteromyia.*

[*Ceronia*]. See *Feronia.* Not to be confused with *Ceronia* Gray 1853 (Mollusca).

Chelidomyia Rondani 1879: 15, for 4 spp. (*hirundinis* Linn., *cypseli* Rndn., *pallida* "Lch.", *melbae* Rndn.). Proposed as substitute for *Stenepteryx* Lch., "*Craterina* Curt." and *Anapera* Meig., all wrongly presumed to be invalid. Misspelled as *Chelyidomyia* by some later author.

Type: *Hippobosca hirundinis* Linn. 1758, orthotype (designation on p. 10). Bequaert (1954: 163) wrongly designated *Ornithomya pallida* Latr. as type.

Status: Absolute synonym of *Stenepteryx* Lch. 1817 which has identical (through synonymy) type-species and is at most a weak subgenus of *Crataerina* Olf. 1816.

[*Chelyidomyia*]. See *Chelidomyia.*

[*Crahterina*]. See *Crataerina.*

Crataerina von Olfers 1816: 101, for 1 sp. (the type). Misspelled or emended as *Crahterina*, *Crataerhina*, *-taerrhina*, *-tarrhina*, *-terhina*, *-terina*, *-thaerhina*, *-thaerina*, *-thaerrhina*, *-thaerrhyna*, *-toerina* by some later authors.

Type: *Crataerina lonchoptera* Olf. 1816 (=*Ornithomya pallida* Latr. 1812), haplotype. Curtis (1824) wrongly listed *Hippobosca hirundinis* Linn. as type.

Status: Distinct genus of Ornithomyinae. Strictly speaking, the "*Craterina* Olf." of Samouelle (1819) and other early English authors is referable to *Stenepteryx.*

[*Crataerhina*, etc.]. See *Crataerina.*

Dorcadophagus Bequaert 1942a: 160, 1 sp. (the type). Proposed as a subgenus of *Melophagus.*

Type: *Melophagus rupicaprinus* Rndn. 1879, orthotype.

Status: Synonym (at most a weak subgenus) of *Melophagus* Latr. 1802.

Echestypus Speiser 1907a: 3, 5, for 2 spp. (*sepiacea* Speis., *parvipalpis* Speis.). Re-published as n. gen. in 1908a: 176, for 2 spp. (*sepiacea* Speis., *binoculus* Speis.). Misspelled as *Eschestypus* by Simpson (1914: 24, 25) and some other authors.

Type: *Lipoptena sepiacea* Speis. 1905, logotype designated by Bequaert (1940: 85). Aldrich (1923: 77) wrongly designated as type *binoculus* (as *binoculatus*) Speis. which was not originally included in the first (1907) publication.

Status: Synonym (at most a weak subgenus) of *Lipoptena* Ntz. 1818.

[*Eschestypus*]. See *Echestypus.*

Feronia Leach 1817a (Septem.): 4, for 3 spp. (*spinifera* Lch., *americana* Lch., *macleayi*

Lch.). Re-published as n. gen. in 1817b (Novem.): 162, for *spinifera* only. Preoccupied (as generally assumed) by *Feronia* Latr. 1817; the exact date of publication (*i. e.*, which month of 1817) is uncertain but believed by Wiedemann (1830: 605) and others to have been prior to Septem. 1817; Wiedemann (*l. c.*) accordingly proposed *Olfersia* as n. name. Misspelled as *Ceronia* by E. Blanchard (1840: 631).

Type: *Feronia spinifera* Lch. 1817, logotype designated by Speiser (1899 Wien. Ent. Ztg. **18**: 202) and accepted by Coquillett (1910 Proc. U. S. Nat. Mus. **37**: 545) *et al.*

Status: Absolute synonym of *Olfersia* Wdm. 1830 (preoccupied) which has identical type-species.

[*Haemabora*]. See *Haemobora.*

Haemobora Curtis 1824: pl. 14, for 1 sp. (the type). Misspelled as *Haemabora* and *Hoemobora* by some later authors.

Type: *Haemobora pallipes* Curt. 1824 (=*Pediculus cervi* Linn. 1758), haplotype.

Status: Absolute synonym of *Lipoptena* Ntz. 1818 which has identical (through synonymy) type-species.

[*Hoemobora*]. See *Haemobora.*

Hippobosca Linnaeus 1758: 607, for 4 spp. (*equina* Linn., *avicularia* Linn., *hirundinis* Linn., *ovina* Linn.). Misspelled as *Hypobosca* and *Hyppobosca* by some later authors.

Type: *Hippobosca equina* Linn. 1758, logotype designated by Latreille (1810 Consid. General. Ins.: 444).

Status: Distinct genus of Hippoboscinae and type-genus of the family.

[*Hypobosca, Hyppobosca*]. See *Hippobosca.*

Icosta Speiser 1905a: 358, for 1 sp. (the type).

Type: *Olfersia dioxyrhina* Speis. 1904, haplotype.

Status: Synonym (at most a subgenus) of *Lynchia* Weyenb. 1881 sen. Beq. 1925.

[*Leptopteryx* Zetterstedt 1837 Isis (Oken): 39, for 1 sp. (the type), doubtfully referred by the author to Coriaceae (=Hippoboscidae)]. Preoccupied, not *Leptopteryx* Horsfield 1821 and *Leptopterix* Hübner 1821, both Lepidoptera.

Status: Synonym of *Aphis* Linn. 1758 (Hem., Aphididae), see Bergtsson (1902 Wien. Ent. Ztg. **21**: 150). Not Hippoboscidae.

[*Leptoptena, -totaena, -totaenia, -totena, Lioptera, Lipolepha, Lipoptema*]. See *Lipoptena.*

Lipoptena Nitzsch 1818: 310, for 1 sp. (the type). Proposed as a subgenus of *Hippobosca* Linn. Misspelled or emended as *Leptoptena, -totaena, -totaenia, -totena, Lioptera, Lipolepha, Lipoptema, -ptenus, -ptera, -pterna, Lipotena, Lipotepna, Lipotina, Liptotena* and *Lypoptena* by some later authors.

Type: *Hippobosca cervina* Ntz. 1818 (=*Pediculus cervi* Linn. 1758), haplotype.

Status: Distinct genus of Lipopteninae.

[*Lipoptenus*, *-ptera*, etc.]. See *Lipoptena*.

Lipoptenella Bequaert 1942a: 55, for 4 spp. (*depressa* Say, *mazamae* Rnd., *gracilis* Speis., *moschi* Pall.). Proposed as a subgenus of *Lipoptena* Ntz.
Type: *Melophagus depressus* Say 1823, orthotype.
Status: Synonym (at most a weak subgenus) of *Lipoptena* Ntz. 1818.

[*Lynchea*]. See *Lynchia*.

Lynchia Weyenbergh 1881: 195, for 1 sp. (the type). Misspelled as *Lynechia*, *Lynchea* by some later authors.
Type: *Lynchia penelopes* Weyenb. 1881, haplotype.
Status: Distinct genus (of Ornithomyinae) as interpreted by Bequaert (1926b: 266) and as now generally accepted. See discussions under the genus in the checklist. Not to be confused with *Lynchia* Williston 1889 (Dipt., Asilidae). The "*Lynchia* Weyenb." of Speiser (1902: 155) and others is referable to *Pseudolynchia*.

[*Lynechia*]. See *Lynchia*.

[*Mallophaga*, *-gus*, *Malophagus*, *Melaphagus*, *Mellophagus*]. See *Melophagus*.

Melophaga von Olfers 1816: 99, for 2 spp. (*hirtella* Olf., *trifasciata* Olf.).
Type: *Melophaga hirtella* Olf. 1816 (=*Hippobosca ovina* Linn. 1758), logotype designated by Bequaert (1942a: 157).
Status: Absolute synonym of *Melophagus* Latr. 1802 which has identical (through synonymy) type-species.

Melophagus Latreille 1802: 466, for 1 sp. (the type). Misspelled or emended as *Mallophaga*, *Mallophagus*, *Malophagus*, *Melaphagus* and *Mellophagus* by some later authors.
Type: *Hippobosca ovina* Linn. 1758, haplotype.
Status: Distinct genus of Lipopteninae.

Melophila Nitzsch 1818: 311, for 1 sp. (the type). Proposed as a subgenus of *Hippobosca* Linn.
Type: *Hippobosca ovina* Linn. 1758, haplotype.
Status: Absolute synonym of *Melophagus* Latr. 1802 which has identical type-species.

Microlynchia Lutz *in* Lutz, Neiva & Costa Lima 1915: 174, 185, for 1 sp. (the type).
Type: *Lynchia pusilla* Speis. 1902, haplotype.
Status: Distinct genus of Ornithomyinae.

Myiocoryza Rondani 1878: 155, for 1 sp. (the type). Conditionally proposed as a new genus.
Type: *Myophthiria lygaeoides* Rndn. 1878, haplotype.
Status: Synonym of *Myophthiria* Rndn. 1875.

[*Myiophteria*, *Myiophthiria*]. See *Myophthiria*.

Myophthiria Rondani 1875: 464, for 1 sp. (the type). Misspelled or emended as *Myiophteria*, *Myiophthiria* by some later authors.
Type: *Myophthiria reduvioides* Rndn. 1875, haplotype.
Status: Distinct genus of Ornithomyinae.

Neolipoptena Bequaert 1942a: 47, for 1 sp. (the type).
Type: *Lipoptena ferrisi* Beq. 1935, orthotype.
Status: Distinct genus of Lipopteninae.

Nirmomyia Nitzsch 1818: 309, proposed as subgenus of *Hippobosca* Linn., for 1 sp. (the type). Misspelled as *Nyrmomyia* by Séguy (1936: 107).
Type: *Hippobosca equina* Linn. 1758, haplotype.
Status: Absolute synonym of *Hippobosca* Linn. 1758 which has identical type species.

[*Nyrmomyia*]. See under *Nirmomyia.*

[*Ocypterum*]. See *Oxypterum.*

Olfersia Say 1823: 101, for 1 sp. (the type).
Type: *Olfersia albipennis* Say 1823, haplotype.
Status: Distinct genus of Ornithomyinae. To avoid confusion, its introduction into the checklist in this paper is temporarily suspended.
Note: Say credited the authorship of *Olfersia* to Leach but did not cite the original reference. Apparently the name was not intended to be a new genus, nor to replace *Feronia* Lch. No separate description for the genus was provided. Nevertheless, the name would be available under the provisions of Articles 11, 12 and 16 in the International Code of Zoological Nomenclature (London edition, 1961) unless Leach can be proven to have already published the name *Olfersia.* Agassiz (1848 Index: 742) listed *Olfersia* as of Leach 1817b: 162 and this was accepted by van der Wulp (1896), Sherborn (1902), Schulze (1930) and many others. However, none of these authors did claim to have actually found this name of Leach. And, Sherborn (*l. c.*) deliberately indicated that the entry *Olfersia* Lch. was quoted from Agassiz and was "non comp." (*non comparet*, that is, he has searched for this name but has not found it). In Neave's (1939) Nomenclator Zoologicus, *Olfersia* was dated from Wiedemann 1830. My own searches for the name in Leach's works so far also failed to confirm Agassiz's finding. The possible sequence of this problem will be: Either *Olfersia* Lch. (in case Leach did publish it) = *Olfersia* Wdm. (preoccupied), = *Pseudolfersia* Coq., = *Olfersia* sen. Beq.; or, in case Leach did not publish it, *Olfersia* Say = *Ornithoponus* Aldr., = *Lynchia* sen. Beq., = *Olfersia* sen. Speis. It should be added that in the former case, the type-species of *Olfersia* Lch., as a new name for *Feronia* Lch., must be identical with that of the latter name. But in Say's case, *albipennis* is the only species available as the type, and in both cases, Wiedemann's name is clearly preoccupied.

Olfersia Wiedemann 1830: 605, as new name for *Feronia* Lch. 1817 not *Feronia* Latr. 1817, for 3 same spp. as did Leach for his *Feronia.* Misspelled as *Alfersia* by Schiner (1853: 153, 154).
Type: Same (since published as a n. name) as that of *Feronia* Lch., *i. e.*, *F. spinifera*

Lch. 1817 which was clearly listed as type by Speiser (1899a: 202), Coquillett (1910 Proc. U. S. Nat. Mus. **37**: 579) and Aldrich (1923: 77). Rondani (1879: 11) wrongly gave as type *O. ardeae* Mcq. which was not originally included. Massonnat (1909: 303) listed *F. americana* Lch. as type.

Status: Preoccupied. Here temporarily retained as a distinct genus of Ornithomyinae. See discussions under the preceding entry and under *Lynchia* sen. Beq. in the checklist.

[*Onithomyia*]. See *Ornithomya.*

Ornitheza Speiser 1902a: 329, for 3 spp. (*andajensis* Rndn., *gestroi* Rndn., *metallica* Schin.).
Type: *Ornithomya gestroi* Rndn. 1878, orthotype.
Status: Synonym of *Ornithophila* Rndn. 1879.

Ornithobia Meigen 1830: 229, for 1 sp. (the type).
Type: *Ornithobia pallida* Meig. 1830 (=*Pediculus cervi* Linn. 1758), haplotype.
Status: Absolute synonym of *Lipoptena* Ntz. 1818 which has identical (through synonymy) type-species.

[*Ornithoctena*]. See *Ornithoctona.*

[*Ornithocea, -thocirca*]. See *Ornithoica.*

Ornithoctona Speiser 1902a: 328, for 10 spp. (*erythrocephala* Lch., *australasiae* Fabr., *batchiana* "Wk. Rndn.", *bellardiana* Rndn., *columbae* Wdm., *hatamensis* Rndn., *javana* Jaenn., "*nigricornis*" Lch., *obscurata* Wk., *sitiens* Bdv.; also doubtfully included are *doreica* Wk., *synallaxidis* Lynch). Misspelled as *Ornithoctena* by Patton & Cragg (1913: 407).
Type: *Ornithomya erythrocephala* Lch. 1817, orthotype.
Status: Distinct genus of Ornithomyinae.

[*Ornithoeca, -thoecia*]. See *Ornithoica.*

Ornithoica Rondani 1878: 159, for 1 sp. (the type). Misspelled or emended as *Anthoica, Ornithocea, -thocirca, -thoeca* and *-thoecia* by some later authors.
Type: *Ornithoica beccariina* Rndn. 1878, haplotype.
Status: Distinct and only genus of Ornithoicinae.

[*Ornithomayia, Ornithomia*]. See *Ornithomya.*

Ornithomya Latreille 1802: 466, for 1 sp. (the type). Misspelled or emended as *Onithomyia, Ornithomayia, -thomia, -thomyia, -thomyja, -thomys, -thomyza, -thymia, -tomyia, Ornothomyia, Ornythomia, Orthomyia* by some later authors.
Type: *Hippobosca avicularia* Linn. 1758, haplotype.
Status: Distinct genus of Ornithomyinae.

[*Ornithomyia, -myja, -mys, -myza*]. See *Ornithomya.*

Ornithopertha Speiser 1902b: 167, for 1 sp. (the type).

Type: *Ornithomya nitens* Bigot 1881, haplotype.

Status: Synonym of *Ornithoctona*. Accepted by some authors as a subgenus of the latter.

Ornithophila Rondani 1879: 20, for 1 sp. (the type).

Type: *Ornithophila vagans* Rndn. 1879 (=*Ornithomya metallica* Schin. 1864), haplotype.

Status: Distinct genus of Ornithomyinae. Wrongly suppressed as a synonym of *Lynchia* by Bequaert (1955) and others. The "*Ornithophila* Rndn." of Speiser (1908), Ferris (1924) etc. is referable to the *Lynchia simplex*-group.

Ornithoponus Aldrich 1923: 77, for 1 sp. (the type). Misspelled as *Ornithotonus* by some later authors.

Type: *Feronia americana* Lch. 1817, orthotype.

Status: Synonym (at most a weak subgenus) of *Lynchia* Weyenb. 1881 sen. Beq. 1926.

[*Ornithotonus*]. See *Ornithoponus*.

[*Ornithymia, Ornitomyia, Ornothomyia, Ornythomia*]. See *Ornithomya*.

Ortholfersia Speiser 1902b: 152, for 1 sp. (the type).

Type: *Ortholfersia phaneroneura* Speis. 1902, haplotype.

Status: Distinct genus of Ortholfersiinae.

[*Orthomyia*]. See *Ornithomya*.

[*Oxcypterum*]. See *Oxypterum*.

Oxypterum (Kirby *in litt.*) Leach 1817a (Septem.): 3, for 2 spp. (*kirbyanum* Lch., *pallida* "Oliv."). Re-published as n. gen. in 1817b (Novem.): 162, for *kirbyanum* only. Misspelled as *Ocypterum* and *Oxcypterum* by some later authors.

Type: *Oxypterum kirbyanum* Lch. 1817 (=*Ornithomya pallida* Latr. 1812), logotype designated by Westwood (1840 Intr. Classif. Ins. 2 Synop.: 154).

Status: Absolute synonym of *Crataerina* Olf. 1816 which has identical (through synonymy) type-species.

Note: As noted by Bequaert (1954: 163 footnote), the binomial *Oxypterum kirbyanum* was also published by Kirby & Spence (1817 Intr. to Ent. **2**: [350], explanation of pl. 5, fig. 1). The plate itself is dated 1.I.1817 but bears no name and probably appeared much before the Explanation. The publication date (*i. e.*, which month of 1817) of the explanation is uncertain but not impossibly earlier than IX. 1817 when Leach's first paper appeared. However, the authorship of both names *Oxypterum* and *kirbyanum* is now generally accredited to Leach, not Kirby & Spence.

Pseudolfersia Coquillett 1899b: 336, for 1 sp. (the type). Misspelled as *Pseudoolfersia* and *Psuedolfersia* by some later authors.

Type: *Pseudolfersia maculata* Coq. 1899 (=*Lynchia fumipennis* J. Sahlb. 1884), orthotype.

Status: Synonym of *Olfersia* Wdm. 1830 (preoccupied). See discussions under *Lynchia* in the checklist.

Pseudolynchia Bequaert 1926b: 271, for 7 spp. (*brunnea* Latr., *capensis* Bigot, *exornata* Speis., *garzettae* Rndn., *maura* Bigot, *maura* var. *lividicolor* Bigot, *rufipes* Mcq., *simillima* Speis.). Proposed as new name for "*Lynchia* Weyenb." of Speiser (1902b: 155), Massonnat (1909: 295), etc.
Type: *Olfersia maura* Bigot 1885 (=*O. canariensis* Mcq. 1840), orthotype.
Status: Distinct genus of Ornithomyinae.

[*Pseudoolfersia*]. See *Pseudolfersia.*

Pseudornithomyia Lutz IN Lutz, Neiva & Costa Lima 1915: 176, 185, for 1 sp. (the type).
Type: *Pseudornithomyia ambigua* Lutz 1915, haplotype.
Status: Synonym of *Ornithomya* Latr. 1802. Accepted by some authors as a subgenus of the latter.

[*Psuedolfersia*]. See *Pseudolfersia.*

Stenepteryx Leach 1817a (Septem.): 3, for 1 sp. (the type). Re-published as n. gen. in 1817b (Novem.): 162. Misspelled or emended as *Stenopterix*, *Stenopteryx* by some later authors.
Type: *Hippobosca hirundinis* Linn. 1758, haplotype.
Status: Synonym (at most a weak subgenus, of *Crataerina* Olf. 1816.

[*Stenopterix*, *-pteryx*]. See *Stenepteryx.* Not to be confused with *Stenopteryx* Guenée 1845 in Lepidoptera.

[*Stilbametopa*]. See *Stilbometopa.*

Stilbometopa Coquillett 1899b: 336, for 1 sp. (the type). Misspelled as *Stilbametopa*, *Stilpometopa*, *Stribbometopa* by some later authors.
Type: *Ornithomya fulvifrons* Wk. 1849, haplotype.
Status: Distinct genus (as now generally accepted) of Ornithomyinae, but *cf.* discussions under *Lynchia* in the checklist.

[*Stilpometopa*, *Stribbometopa*]. See *Stilbometopa.*

Struthiobosca Maa 1963: 80, for 1 sp. (the type).
Type: *Hippobosca struthionis* Jans. 1889, orthotype.
Status: Distinct genus of Hippoboscinae.

Zoomyia Bigot 1885: 227, 234. No spp. definitely included. Tentatively proposed as a substitute for *Hippobosca* Linn.
Type: *Hippobosca equina* Linn. 1758, logotype designated by Bequaert (1931: 304).
Status: Absolute synonym of *Hippobosca* Linn. 1758 which has identical type-species,

II. ALPHABETICAL LIST OF SPECIFIC AND INFRASPECIFIC NAMES

Aside from a large assemblage of variants in spelling, 346 specific and infraspecific names have made their appearance for Hippoboscidae up to the end of 1962. Out of this number, 3 are pre-Linnean, 17 *nomina nuda* and 9 (1 aphidid, 2 bombyliids, 1 nycteribiid and 5 streblids) have been erroneously included in the family as now accepted. Thus even without taking into account the numerous emendations which have nomenclatorial availability, there still remain no less than 317 specific and infraspecific names available for about 120 "valid" species in true Hippoboscidae.

Types of 69 names or about 22 % of the total are lost or presumably so, but I am fortunate in having been able to locate and examine about 88 % of those still existing. Every care and opportunity has been taken to ascertain their authenticity and to clarify their systematic as well as nomenclatorial status. For these purposes, the original examples were compared with the corresponding original descriptions, with earlier authors' notes on types and when available, with fresh and properly prepared material. At the same time, labels connected with the types were checked against the published original data.

With few exceptions, the existing types of Hippoboscidae are preserved in the conventional way—dried and pinned—and are often shrivelled, moulded or damaged. Under such circumstances, the comparisons must be considered superficial and the conclusions necessarily tentative. While the synonymy of many names as suggested by earlier workers are herein verified, 25 are sunk for the first time as synonyms, and the status of some previously suppressed synonyms is re-adjusted. Ten new combinations are here proposed, 5 neo- and 48 lectotypes selected, and type localities of 25 nominal species either corrected or restricted. During the course of preparing the lists, it was also discovered that 25 nominal species have been each published twice from the same type material; 11 published in names not identical with those on type labels, and 10 have each a composite type series. Furthermore, of about 20 nominal species, the type localities given in original descriptions are not quite in accord with those on type labels.

The status of all except the 8 following nominal species are placed in order: *Hippobosca strigis* Scop. 1772, *Ornithomya fusca* Guér. 1838, *Lipoptena pteropi* Denny 1843, *Ornithobia capensis* Wk. 1849, *Ornithomya synallaxidis* Lynch 1881, *Lynchia penelopes* Weyenb. 1881, *Ornithomya villadae* Dugès 1887, *Olfersia parallelifrons* Speis. 1902. Three of these (*strigis*, *pteropi* and *capensis*) are probably referable, respectively, to species at present known as *Ornithophila gestroi* (Rndn.) 1878, *Lipoptena pauciseta* Edw. 1919 and *Ornithophila metallica* (Schin.) 1864 over which they will have priority once the synonymy is established; *parallelifrons* is possibly a distinct species of *Lynchia* sen. Beq.; *penelopes* is probably a distinct species of *Stilbometopa* (see discussions under *Lynchia* in the checklist); the remaining 4 names have little chance of being revived to represent distinct species.

Besides the afore-mentioned, the first line of each entry lists the pagination, illustrations and sex (-es) as given by the original description. The heading "Type (-s)" provides details of collection data (for very old or little known species, data in the original description and on type labels are both given), location and state of preservation, records of earlier re-examinations, etc. so as to prove or disprove the type authenticity and to facilitate later authors in the recognition of the specimen (-s) in question. The heading "Status" includes the generic position or synonymy. For quick cross-reference to the code number in the Checklist and Natural Groupings (vide postea), the same number is here inserted

in parenthesis. Also included are earlier authors' misplacements to wrong genus or misinterpretation of the name. Unless the contrary is stated, the existing type listed below have been re-examined by me and are understood to be pinned specimens in reasonably good condition. Types in the genera *Lipoptena* and *Neolipoptena* are understood to be de-alated specimens.

acarta (*Olfersia*) Speiser 1902b: 149, no sex given; re-published as n. sp. in 1902c: 87.

Types: Holotype destroyed, sex unknown, Molokai, Hawaii Is., off *Atagen aquila* [*Fregata minor palmerstoni* Gmel.], formerly in Bremen Mus.; 1♂, 2♀♀ (Brit. Mus. ♯1903. 80, *ex* Sandwich Is. Committee Roy. Soc.), paratypes, Kona, Hawaii I., Hawaii Is., off short-eared owl [*Asio flammeus sandwichensis* Bloxam], re-examined by Austen (1903: 264) and Bequaert (1955: 329), one of the ♀♀ with name label in handwriting by Speiser; 2♀♀ (Bishop Mus. *ex* Fn. Hawaii. Coll. ♯435 & 436), same data, with Speiser's name labels, re-examined by Bequaert (1941b: 281), the ♯436 is here selected as neotype; whereabouts of the 2 other paratypes of undetermined sex unknown, presumably lost.

Status: Synonym of *Lynchia nigra* (Perty) 1833 (♯54).

acromialis (*Olfersia*) Speiser 1904d: 386, no sex given.

Type: Original type destroyed, unique, sex unknown, from Seleo nr. Berlinhafen [= Aitape], NE New Guinea, no host record, formerly in Budapest Mus. Neotype, here designated, ♀, partly on slides and partly in alcohol, in Bishop Mus., from Oransbari, 3 m, W. New Guinea, off *Tampitteia galatea* Gray, 10. II. 1963, L. P. Richards & M. C. Thompson.

Status: Distinct species of *Lynchia* sen. Beq. (♯64).

[*acuminatum*]. See under *kirbyanum.*

acutipennis (*Crataerina*) Austen 1926: 355, fig. 1a, ♂♀.

Types: Original series 6♂♂, 5♀♀, all in Brit. Mus., off *Micropus* [*Apus*] *unicolor* Jardine, *M.* [*Apus*] *murinus brehmorum* Hart. and (?) *M.* [*Apus*] *caffer* Licht., all pinned except 1♂ from Fuerteventara, Toston, Canary Is. and 1 of the 2♂♂ from Firgas nr. Las Palmas, Grand Canary, Canary Is. which are in alcohol; of the series from Pretoria, Transvaal, S. Africa, 1♂, 1♀ were labeled by Austen as ♂- and ♀-types respectively, the ♀ should be selected as lectotype; other paratypes are from S. Africa (Durban, Natal), Canary Is. (Firgas) and Madeira Is.

Status: Distinct species of *Crataerina* (♯24).

aegyptiaca (*Hippobosca*) Macquart 1843: 431 (=p. 274 of reprint), pl. 36 (5), ♂. As *egyptiaca* on p. 431 (=p. 274 of reprint) at heading of the species, and as *oegyptiaca* on p. 294 of reprint (explanation of plates), both were apparently misprinted, and were correctly spelled on p. 431 (=p. 274 of reprint) in introductory notes on the genus.

Types: Lost, not now at Paris Mus. The original record reads "D'Egypte. Muséum", no host data.

Status: Synonym of *Hippobosca variegata* Megerle 1803 (♯103). Once listed as a variety of *H. maculata* Lch. which is another synonym of *variegata*.

aenescens (*Olfersia*) C. G. Thomson 1869: 610, no sex given.

Type: ♂ (Stockholm Mus. *ex* coll. Kinb.), unique, Keeling I. in Indian Ocean, no host record, with no name label on pin by Thomson, re-examined by Speiser (1904b: 83) and Bequaert (1957: 443).

Status: Distinct species of *Olfersia* (♯89). Once assigned to *Lynchia* and *Pseudolfersia.*

aenescens (*Ornithomyia*) Bigot 1885: 244, no sex given.

Types: 3♂♂, 2♀♀ (coll. Collin *ex* coll. Bigot), New Caledonia, no host record, re-examined by Speiser (1902b: 170) and determined by him as *andaiensis* (sic) Rndn. which is a synonym of *metallica* Schin. Two of the 5 specimens are evidently later additions as the original description was stated to have been based upon 3 specimens only (unless the "3" was a misprint for 5). One of the ♀♀ is here considered lectotype.

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (♯12).

albipennis (*Olfersia*) Say 1823: 101, no sex given.

Types: Lost; originally recorded from "U. S. A.", off *Ardea herodias herodias* Linn., not now traceable at Philadelphia Acad. Sci. and in coll. Wiedemann. The exact type locality, as suggested by Swenk (1916: 126) is probably nr. Blair, Nebraska. Neotype, ♀, selected and described by Swenk (1916: 126, 133), from Lincoln, Nebraska, off *Butorides virescens virescens* Linn., in Nebraska Univ., re-examined by Bequaert (1955: 344), and listed by Muma (1952: 14), not seen by me.

Status: Distinct species of *Lynchia* sen. Beq. (♯48).

albiventris (*Ornithoctona*) Bau 1922: 274, 276, ♀.

Type: ♀ (pregnant) (Berlin Mus.), unique, in alcohol, Estación Meyer, Prov. Sa. Clara, Cuba, off "grosse weisse Eule" (surmised by Bau to have been *Strix flammea furcata* [*Tyto alba furcata* Temm.]).

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (♯41).

albo-maculata (*Hippobosca*) Macquart 1855: 148 (=p. 128 of reprint), no sex given.

Types: 2♀♀ (coll. Collin *ex* coll. Bigot), re-examined by Speiser (1902b: 178). The one with Macquart's handwritten label "*Hippobosca albomaculata* n. sp…" [here no hyphen between *albo* and *maculata* as appeared in original description] should be considered lectotype. The original record reads "De l'Océanie, cap des Aiguilles. M. Bigot", with no host data. The type locality should be corrected to Cape Agulhas or Aguilhas nr. Cape of Good Hope, S. Africa, not Cape Aiguilles on Great Barrier Is., New Zealand (see Bequaert 1931: 320; Paramonov 1950 Ann. Mag. Nat. Hist., ser. 12, **3**: 516).

Status: Synonym of *Hippobosca rufipes* Olf. 1816 (♯102). Suggested by Paramonov (*l. c.*) to be probably synonymous with *H. canina* "Wied." [Wiedemann never published this name, whereas *H. canina* Rndn. 1878 and *H. equina canina* Dryensky 1926 are both synonymous with *H. longipennis* Fabr. 1805.]

albonotata (*Hippobosca*) Rondani 1863: 92, no sex given.

Types: Now not in Bologna, Firenze, Genova, or Milano museum. The original

record reads "Caffreria (sic)—Spinola", (no host record) hence possibly the type is now in coll. Spinola at Torino Mus.

Status: Synonym of *Hippobosca rufipes* Olf. 1816 (#102).

alcis (*Lipoptena*) Schnabl 1881: 390 (=p. 34 in reprint), ♀; re-published as *L. cervi* var. *alcis* in 1882: 13.

Types: 5♀♀ (Warszawa Mus.), from Pinsk, Lithuania, off *Cervus alcis* [*Alces alces* Linn.], re-examined by Bequaert (1942b: 80), not seen by me; 1♀ (Amsterdam Mus. *ex* coll. de Meijere), labeled "Lithuanen, Schnabl" and "*Lipoptena Cervi* var. *Alcis*. Lithuania", possibly in handwriting by Schnabl, is here selected as lectotype; 1♀ (Amsterdam Mus.), paratype, with identical labels but the second one by an unknown hand; 1♂ (Amsterdam Mus. *ex* coll. de Meijere), paratype, "op *Cervus alcis*. Schnabl" and with a name label by an unknown hand; 2♀♀ (Wien Mus.), paratypes, labeled "Dr. Schnabl", one of the 2 with an additional label "*Lipoptena cervi* var. *alcis*. Lithuania."

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109).

ambigua (*Pseudornithomyia*) Lutz IN Lutz, Neiva & Costa Lima 1915: 185, pls. 27 (5) & 28 (7), no sex given.

Types: 4 ex., sex unknown, Minas Gerais and Sa. Catharina, Brazil, off *Leptotilla rufaxilla* [*L. r. reichenbachii* Pelzeln] and "andorinhas" [swallows], in Inst. Osw. Cruz, Rio de Janeiro, not seen by me.

Status: Distinct species of *Ornithomya* (#18).

americana (*Feronia*) Leach 1817a: 11, pl. 27 (1–3), no sex given. Re-published in 1818: 557, pl. 27 (1–3).

Type: ♀ (Brit. Mus.), unique, with printed label "Georgia" and handwritten name label by Leach, no host data, re-examined by Austen (1903: 264) and Bequaert (1955: 300).

Status: Distinct species of *Lynchia* sen. Beq. (#49). Once assigned to *Olfersia*, "*Ornithotonus*" (error for *-ponus*) and *Ornithoponus*. The "*americana* Lch." of Johnson (1924: 91) etc. is referable to *Lynchia nigra* (Perty); that of Massonnat (1909: 304, pl. 5(40–42), ♀), to *Lynchia massonnati* (Falc.).

[*anchineura*]. See under *anchineuria*.

anchineuria (*Ornithomyia*) Speiser 1905a: 348, as n. name for *O. pallida* Say 1823 not Latr. 1812, not Olf. 1816. Misspelled as *anchineura* by some later authors.

Type: Same as that of *O. pallida* Say (*q. v.*).

Status: Synonym of *Ornithomya fringillina* Curt. 1836 (#15). Once listed as a variety or synonym of *O. avicularia* (Linn). The "*anchineuria* Speis." of Donoso Barros (1949: 404) is referable to *O. parva* Mcq.

[*andaiensis*]. See under *andajensis*.

andajensis (*Ornithomyia*) Rondani 1878: 155, no sex given. Emended to *andaiensis* by some later authors.

Type: ♀ (Genova Mus.), unique, glued on card, anal margin of both wings damaged, with printed label "N. Guinea. Andai. XII. 1875. Beccari" and Rondani's handwritten name label, no host record. Andai is a small village SW of Manokwari, Vogelkop Penin., W. New Guinea.

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (#12). Once listed as a distinct species of *Ornitheza.*

angustifrons (*Olfersia*) van der Wulp 1903: 430, pl. 13 (3, 3a), ♂♀. Misspelled as *augustifrons* by Dunn (1934: 175).

Types: 1♂, 1♀ (Brit. Mus. #1903. 133), from Río Sucio, Costa Rica and Teapa in Tabasco, Mexico and with printed "♂ Type" and "♀ Type" respectively, no host record, both with name labels by v. d. Wulp, re-examined by Austen (1903: 265) and Bequaert (1955: 311). The ♂, with head glued on card, should be selected as lectotype; the head, left wing, all legs and abdomen of the ♀ are missing.

Status: Distinct species of *Lynchia* sen. Beq. (#50). Once assigned to *Ornithoponus* and once as a synonym of *L. fusca* (Mcq.) [=*nigra* (Perty)].

annalis (*Ornithoica*) Kishida 1932: 247, fig. 479, ♀.

Types: From Japan, off "mizogoi" [*Gorsakius goisagi* Temm.], in coll. Kishida, not seen by me.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

anomala (*Crataerina melbae* var.) Gil Collado 1933: 321, no sex given.

Type: Sex unknown, from Puebla de Don Fadrique, Spain, no host record, probably in coll. Gil Collado, not seen by me.

Status: Synonym of *Crataerina melbae* (Rndn.) 1879 (#25).

anthracina (*Ornithopertha*) Speiser 1904d: 393, no sex given.

Type: ♀ (Wien Mus.), unique, no host record, with printed label "Honduras. Wittkugel. 91." and Speiser's handwritten label "*Ornithopertha anthracina* Speiser. Typus."

Status: Synonym of *Ornithoctona nitens* (Bigot) 1885 (#40).

antilopes (*Hippobosca*) Pallas 1777: 50 footnote, pl. 3 (12 C), no sex given.

Types: 3♀♀ (Wien Mus. *ex* coll. Winthem), glued on same card, labeled "Ex *Antil. gutturosa*", "*gutturosa.* Coll. Winthem", "Russland" and "*Antilopes* Pallas. Russia merid." (No locality was given in original description but evidently same as its host). The left-side ♀ on the card selected by H. Oldroyd 1960 (*in litt.*) as lectotype. Confer next entry for type locality and host.

Status: Distinct species of *Melophagus* (#124). Once assigned to *Lipoptena.*

antilopes (*Melophaga*) Wiedemann 1830: 614, no sex given, as n. sp.

Types: Same as that of *Hippobosca antilopes* Pallas (*q. v.*). Wiedemann (*l. c.*) stated to have received the material from Pallas collected in S. Russia off *Antilope gutturosa* [*Procapra gutturosa* Pall.] These records are in accord with the labels now on the types but not with Pallas' work which Wiedemann failed to cite. *P. gutturosa* occurs not in S.

Russia but Transbaikalia, Chuiskaya Steppe, Siberian Altai, Mongolia, Inner Mongolia and Kansu. And G. Allen (1940 Mamm. China & Mongolia: 1211) fixed the type locality as upper River Onon, southern Transbaikalia, formerly part of northern Mongolia (*cf.* J. R. Ellerman & T. C. S. Morrison-Scott 1951 Checklist Palaearct. & Indian Mamm.: 388). Therefore the type locality of both *Hippobosca antilopes* Pall. and *Melophaga antilopes* Wdm. must be fixed as southern Transbaikalia, and the locality "S. Russia" as recorded by Wiedemann and attached to the type specimens turns out to be incorrect.

Status: Absolute synonym of *Melophagus antilopes* (Pall.) 1777 (#124).

aobatonis (*Ornithomyia*) Matsumura 1905: 119, pl. 28 (12), ♂♀.

Types: From Honshu and Hokkaido, Japan, off "aobato" [*Spenocercus sieboldi sieboldi* Temm.], in Hokkaido Univ., not seen by me.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (#13). Once interpreted by Bequaert (1941b: 269) as a synonym of *Ornithoctona australasiae* (Fabr.).

[*aptera* (*Hippobosca*) Linnaeus 1747 Wästgöta Resa: 59. Sweden.] nom. prae-1758.

Status: Synonym of *Melophagus ovinus* (Linn.) 1758 (#123).

[*aquilae* (*Hippobosca*) Brodie & White 1883 Check List Ins. Canada: 57. Canada.] nom. nud.

Status: Probably a synonym of *Lynchia americana* (Lch.) 1817 (#49).

[*ardae, ardaea, ardea*]. See under *ardeae.*

ardeae (*Olfersia*) Macquart 1835: 640, pl. 24 (10), no sex given. Misspelled by some later authors as *ardae, ardaea* and *ardea.*

Type: Presumably lost, not now traceable in coll. Collin or at Paris Mus.; the original record reads "M. Al. Lefebvre l'a trouvée en Sicilé sur un héron [*Ardea* sp.]".

Status: By Bequaert's (1953a, 1955) interpretation, a synonym of *Lynchia albipennis* (Say) 1823 (#48). Once listed as a distinct species of *Lynchia* and *Ornithoponus* and once assigned to *Alfersia* (err. for *Olfersia*).

[*augustifrons*]. See under *angustifrons.*

asiatica (*Ornithomyia*) Macquart 1851: 282 (=p. 309 of reprint), pl. 28(14), no sex given.

Type: ♀ (Paris Mus.), unique, with printed label "Muséum Paris. Manille. Gallery 121–40" and handwritten ones "121/40" and "*Ornithomyia asiatica* Macq. n. sp." (the last is in handwriting by Macquart), re-examined by Bequaert (1952: 219). The original record reads "D'Asie. Muséum" and did not include host data. As evidenced by the label on type specimen, the type locality should be fixed as Manila, Luzon, Philippine Is.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

[*atra* (*Hippobosca*) Lepechin 1774 Tagebuch d. Reise···Russischen Reiches (transl. by Hase): 311, pl. 19 (9). Ural]. nom. non- binom., re-named *H. uralensis* by Gmelin (1790).

Status: Not hippoboscid, but a bombyliid, probably of the genus *Bombylius* or *Hemipenthes* (*cf.* Speiser 1903b: 71).

australasiae (*Hippobosca*) Fabricius 1805: 337, no sex given.

Type: Lost; not now at Kiel, Kφbenhavn or Paris Mus. Type locality, given as "Insulis Oceani Pacific" in original description, is here fixed as Java which is the type locality of *Ornithomyia javana* Jaenn. 1867, the earliest junior synonym of *australasiae* as currently understood. No host record.

Status: By conventional interpretation, a distinct species of *Ornithoctona* (#34). Once assigned to *Ornithomya*. The "*australasiae* Fabr." of Latreille (1812: 544) and Macquart (1835: 642) is referable to *Ornithoctona plicata* (Olf.), that of Walker (1849: 1142), to *Lynchia chalcolampra* (Speis.).

australica (*Ornithophila*) Paramonov 1954: 291, ♂.

Type: Holotype ♂ (ANIC: Commonw. Sci. Ind. Res. Organiz., Canberra), from Tambourine, SE Queensland, Australia, no host record, not seen by me.

Status: Distinct species of *Lynchia* sen. Beq. (#62).

australis (*Hyppobosca*) (sic) Guérin-Méneville 1831: pl. 21 (12), no sex given. Text published in 1838: 320, as *Ornithomyia*.

Type: Unique (Paris Mus.), sex undeterminable, fore and hind legs and abdomen missing, labeled "Guérin-Méneville", "Port Jackson", "Muséum Paris. Coll. Guérin-Méneville 1871", "Type" (all printed) and "*Ornithomyia australis* nob. nov. sp. Port Jacks." (in Macquart's handwriting), no host record, re-examined by Bequaert (1952: 219). Port Jackson is near Sydney, N. S. Wales, Australia.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42). Once listed as a variety of that species and once as of *O.* variety *nigricans* (Lch.) [=*plicata*].

[*aviculare*]. See under *avicularia*.

avicularia (*Hippobosca*) Linnaeus 1758: 607, no sex given. Misspelled by some later authors as *aviculare* or *avicularis*.

Type: Lost. Presumably from Sweden (no locality given in original description), off birds ("habitat in avibus").

Status: As based upon conventional interpretation, a distinct species of *Ornithomya* (#13). The "*avicularia* Linn." of Leach (1817a: 15; 1818: 561) etc. is referable to *O. fringillina* Curt.; that of Fitch (1850: 797), to *Lynchia americana* (Lch.); that of van der Wulp (1903: 431), to *Ornithoctona fusciventris* (Wdm.).

[*avicularis*]. See under *avicularia*.

bactriana (*Hippobosca*) Rondani 1878: 165, no sex given.

Types: 1♂ (Genova Mus.), with labels written by an unknown hand "Massaua [= Massawa, on Red Sea in Eritrea]. IV. 1870. Beccari", and "*Hippobosca bactriana* Rndn.", here selected as lectotype; 2♂♂, 1♀ (Genova Mus.), paratypes, same data but with no name labels; 1♂ (Genova Mus.), paratype, "Persia setteute. 1862–63. C. Maria" (printed), no name label; 1♂, 2♀♀ (Firenze Mus. #3415), each with printed label "Massauah, IV. 1870. Beccari", in 2 series under cabinet labels in handwriting by Rondani "*bactriana* Rnd. Persia." The host given in original description is *Camelus bactrianus* Linn. Following the

selection of lectotype, the type locality is here restricted as Eritrea.

Status: Synonym of *Hippobosca camelina* Lch. 1817 (#100).

batchiana (*Ornithomyia*) (Bell. *in litt.*) Rondani 1878: 158, no sex given. Listed by Bau (1929b: 10) as *batschiana.*

Types: 1♀ (Genova Mus.), unique, with printed label "Australia. Grafton. D'Albertis. 1873" and handwritten labels "*Ornithomyia Batchiana* Bell." (by Rondani) and "*Ornithoctona australis* Guér." (by Speiser), no host record, re-examined by Bequaert (1952: 219), here selected as lectotype. Syntypes from the Philippines mentioned in original description, collected by Semper, listed later by Osten Sacken (1882 Berlin. Ent. Ztschr. **26**: 246), not seen by me, possibly in Berlin Mus. A second ♀ in Genova Mus. with printed label "Nuova Guinea. Andai. Ag. 72. L. N. D'Albertis." and handwritten labels "*Ornithomyia Batchiana* Rond.?" (by Rondani ?) and "*Ornithoctona doreica* Wk." (by Speiser) is not a syntype, since New Guinea was not mentioned in original description.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

Note: The word "Bell." in Rondani's paper and label probably stands for the Italian dipterist Luigi Bellardi who never published anything on this species. The name "*batchiana*" is, on the other hand, perhaps derived from the name of a person Batchi rather than that of the island Batchian.

[*batchiana* Wk.]. See under *batchianica.*

batchianica (*Ornithomyia*) Walker 1861: 300, no sex given.

Types: Originally described from Batchian, Molucca Is., collected by A. R. Wallace, but there is now no such specimen at Brit. Mus. or Oxford Univ., and hence in strict sense, the type is lost. Other specimens presumably determined by Walker are: 1♀ (Oxford Univ.), with a round label "Gil." and a rectangular one "*Ornithomyia batchiana* (sic) Walker. Gilolo. Wallace. E. [Ex] Mus. Saund. 1867. 10 *d*" (According to the file at the University, this specimen was purchased for 10 pennies at an auction by E. Saunders), apparently this same specimen formed the basis of the Gilolo record of this species by Walker (1862: 17) and may be considered as neotype; 1♀ (Brit. Mus. #68. 4, *ex* coll. Saunders), Ceram, collected by Wallace, not included in Walker's (1862: 20–23) list of Ceram Diptera.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

[*batschiana*]. See under *batchiana.*

beccariina (*Ornithoica*) Rondani 1878: 160, 2 unnumbered figs., no sex given.

Types: 2♀♀ (Genova Mus.), glued on separate cards but pinned together, with printed label "Amboina. 1873. O. Beccari" and handwritten labels "Amboina. 12. 1. 72. su un *Ardea alba* [*Casmerodius albus modestus* Gray]" and "*Ornithoica* Rnd. *Beccariina* Rnd." (in Rondani's handwriting), the upper specimen is here selected as lectotype; 1♀ (Genova Mus.), paratype, mounted on slide by Ferris 1929, same data; these 3 specimens have been re-examined by Speiser (1900: 557), Ferris (1929: 281, figs. 1, 2 A) and Bequaert (1954: 113). 2♀♀ (Firenze Mus. #3404), paratypes, glued on cards, no locality and host data on pins but placed under Rondani's cabinet label "*Ornithoeica* (sic) n. *Beccariina* n."

Status: Distinct species of *Ornithoica* (#1). Bequaert (1954: 115) suppressed it as a synonym of *O. confluenta* (Say). The "*beccariina* Rndn." of Speiser (1900) is refereble to *O. exilis* (Wk.).

bellardiana (*Ornithomyia*) Rondani 1878: 157, no sex given.

Types: 4♀♀ (Firenze Mus. #3403), one of them here selected as lectotype, no locality and host data on pins but placed under Rondani's cabinet label "*pyrrocephala* (sic) m. Mexico"; 1♀ (Genova Mus.), paratype, labeled "*Ornithomya pyrrhocephala* Rndn. Messico. D. Rondani 1877" by some museum assistant, this specimen is also the holotype of *O. pyrrhocephala* (Rndn. *in litt.*) Speis. (1904a: 344) and has been re-examined by Bequaert (1954: 204). Rondani in fact never published the name *pyrro-* or *pyrrhocephala* but *bellardiana* instead. As these 5 specimens are the only Mexican material in the Rondani collection referable to his *bellardiana*, there leaves no doubt that they should be considered syntypes of the latter name.

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (#41).

bengalensis (*Hippobosca aegyptiaca* var.) Ormerod 1895b: 82, no sex given. Re-published in 1896: 80. Proposed as "may be perhaps called var. *bengalensis*."

Types: 1♂, 2♀♀ (Genova Mus.); ♂ here selected as lectotype, labeled "Bengala. Sui Cavalli [horses]. Ormerod. 95" and "*Hippobosca aegyptiaca* v. *bengalensis* Orm. D. Ormerod 95", both in hand by some museum assistant; the 2♀♀ with no labels on pins.

Status: Synonym of *Hippobosca variegata* Megerle 1803 (#103).

bequaerti (*Ortholfersia*) Maa 1962: 606, ♂♀.

Types: Holotype ♂, allotype ♀ (Australian Mus. #K36959), Moreton Bay nr. Brisbane, SE Queensland, Australia, off *Thylogale eugenii* Desm.; 1♀ paratype (Bishop Mus.), seriously damaged, same locality, off *Protemnodon dorsalis* Gray.

Status: Distinct species of *Ortholfersia* (#91).

bicorna (*Lynchia*) Ferris 1927c: 230, figs. 18–19, ♂.

Type: ♂ (Stanford Univ.), unique, on 2 slides, abdominal apex damaged, genitalia largely missing, from Limay, Bataan Prov., Luzon, Philippine Is., off *Penelopides manillae* Bodd.

Status: Distinct species of *Lynchia* sen. Beq. (#70). Bequaert (1953a: 271) suggested that it was probably a synonym of *L. dioxyrhina* (Speis.).

biloba (*Ornithomyia*) Dufour 1827: 243, no sex given.

Types: Lost; not now traceable at Paris Mus. Originally recorded from Saint-Sever, France, no definite host data.

Status: By Bequaert & Leclercq's (1947: 83) interpretation, a distinct species of *Ornithomya* (#20). Long wrongly suppressed by Bezzi, Speiser, Falcoz *et al.* as a synonym of *O. fringillina* Curt.

[*binoculatus*]. See under *binoculus*.

binoculus (*Echestypus*) Speiser 1908a: 176, 1 unnumbered fig., ♀♂. Misspelled as *binocu-*

latus by Aldrich (1923: 77).

Types: 2♂♂, 4♀♀ (Berlin Mus.), in alcohol, one of the ♀♀ here selected as lectotype, Kalahari, Bechuanaland, S. Africa, off "Steenbok" [*Raphicerus campestris* Thnb.].

Status: Distinct species of *Lipoptena* (#105).

bipartita (*Hippobosca*) Macquart 1843: 432 (=p. 275 of reprint), no sex given.

Types: 1 ex. (Paris Mus. #726, *ex* coll. Macquart), possibly ♀, abdomen largely eaten up by museum pests, labeled "Muséum Paris. Pondichéry. Leschenault" (printed) and with a handwritten label giving names of the same locality and collector, but no name label on pin. This is here considered to be lectotype. Meanwhile there is 1♀ now at the same Museum, general collection, with 3 of its legs missing, labeled "Muséum Paris. Bellinger", "Voyage Bellinger", "623" and although with Macquart's handwritten label "*hippobosca bipartita*", it is doubtless not a syntype. The original record reads "De Pondichéry. Leschenault." Bequaert (1952: 218) mentioned to have seen the type of *bipartita* labeled by Macquart with a specific name meaning "tripartite" but failed to give any other information. I did not see the specimen in question.

Status: Synonym of *Hippobosca variegata* Megerle 1803 (#103).

bisulcata (*Olfersia*) Macquart 1847a: 111 (=p. 95 of reprint), pl. 6 (12), no sex given.

Type: ♂ (not ♀ as assumed by authors) (coll. Collin *ex* coll. Bigot), unique, Chile, no host record, with Macquart's "n. sp." name-label, re-examined by Speiser (1902b: 179), Collin (IN Bequaert 1933b: 104) and Bequaert (1957: 464). The original record reads "Du Chili. M. Bigot."

Status: Distinct species of *Olfersia* (#86). Once assigned to *Pseudolfersia.*

bolivianus (*Melophagus ovinus* f.) Bau 1930b: 176, ♀♂.

Types: Holotype ♂, destroyed, Oruro, Bolivia, no host record, formerly in Hamburg Mus.; 2♀ paratypes (Stanford Univ.), same data, re-examined by Bequaert (1942a: 203); 1♂ (Berlin Mus.), with Bau's handwritten labels "*Melophagus bolivianus* Bau ♂" etc., no host data, originally a paratype, here selected as a neotype.

Status: Synonym of *Melophagus ovinus* (Linn.) 1758 (#123).

botauri (*Olfersia*) Rondani 1879: 22, no sex given.

Type: ♀ (Firenze Mus. #3406), unique, "Liguria", no host record, placed under cabinet label in Rondani's handwriting "*botauri* mihi. Etr. [usia]." The original record reads "Unicum exemplar vidi in Italia media captum, *Ardeae purpuratae* parassitum."

Status: Synonym of *Lynchia albipennis* (Say) 1823 (#48).

botaurinorum (*Olfersia*) Swenk 1916: 128, no sex given. Misspelled as *botaweirorum* by Strickland (1938: 219).

Types: Holo- and 1 paratype, ♀♀ (Nebraska Univ.), Omaha, Nebraska, USA, off *Ixobrychus exilis exilis* Gmel.; 1♀ paratype (Nebraska Univ.), same locality, off *Botaurus lentiginosus* Rackett. All re-examined by Bequaert (1955: 347), not seen by me. Holotype listed by Muma (1952: 14).

Status: Synonym of *Lynchia albipennis* (Say) 1823 (#48). Once listed as a distinct

species of that genus.

[*botaweirorum*]. See under *botaurinorum.*

[*brunea*]. See under *brunnea.*

brunnea (*Ornithomyia*) Latreille 1812: 544, no sex given. Misspelled by some later authors as *brunea.* Authorship often wrongly accredited to A. G. Olivier.

Type: Lost. From Carolina [probably nr. Charleston, S. Carolina, *teste* Bequaert 1955: 411, 416], USA, no host record.

Status: By Bequaert's (1926a, 1935a, etc.) interpretation, a distinct species of *Pseudolynchia* (#77). Once assigned to *Lynchia* and *Olfersia.* The "*brunnea* Latr." of Coquillett (1907) etc. is referable to *Ps. canariensis* (Mcq.).

bubonis (*Hippobosca*) Packard 1869: 417 footnote, fig. 340, ♀.

Type: ♀ (Harvard Univ.), unique, only wings and parts of thorax and legs left on pin, labeled "Essex County, Massachusetts" (the original description gave no definite locality), off Great Horned Owl [*Bubo virginianus virginianus* Gmel.], re-examined by Bequaert (1933b: 76, 1955: 300).

Status: Synonym of *Lynchia americana* (Lch.) 1817 (#49).

butalis (*Ornithomyia*) Coquillett 1899a: 346, no sex given.

Type: ♀ (U.S. Nat. Mus. #1389), unique, Bering I., Bering Strait, off *Butalis sibirica* [*Muscicapa sibirica* Gmel.], re-examined by Bequaert (1954: 85).

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (#12).

buteonis (*Ornithomyia*) Swenk 1916: 133, no sex given.

Types: Holotype ♀ (Nebraska Univ.), Neligh, Nebraska, USA, off *Buteo platypterus platypterus* Vieillot; 1♀ paratype (Nebraska Univ.), Guápiles, Costa Rica, no host record. Types re-examined by Bequaert (1954: 206), not seen by me; holotype listed by Muma (1952: 14).

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (#41).

[*calops*]. See under *calopsis.*

calopsis (*Hippobosca*) Bigot 1885: 236, no sex given.

Type: ♂ (coll. Collin *ex* coll. Bigot), unique, Ceylon, no host record, under cabinet label "*calops*" (sic), determined by Speiser (1902b: 162) as *H. maculata* Lch., re-examined by Bequaert (1952: 218).

Status: Synonym of *Hippobosca variegata* Megerle 1803 (#103).

[*cameli*]. See under *camelina* Lch.

camelina (*Hippobosca*) (Savigny *in litt.*) Leach 1817a: 10, pl. 27 (11–14), no sex given. As *cameli* in explanation of plates on p. 20. Re-published in 1818: 556, pl. 27 (11–14).

Types: Lectotype ♀ (Brit. Mus.), fixed by Austen (1903: 257), from Egypt, no host

record on pin (although the original descripition gave camel as host), with Leach's handwritten label "*cameli*" (sic), re-examined by Bequaert (1939b: 88); 1♀ (Macleay Mus., Sydney), paratype, with printed label "Africa" and Leach's handwritten label "*Hippobosca cameli* (sic) Savigny."

Status: Distinct species of *Hippobosca* (♯100).

camelina (*Hippobosca*) Dufour 1858: ciii, no sex given, as n. sp. Name preoccupied, not Leach 1817.

Type: Lost; not now traceable in Paris Mus.; from southern part of Oran Prov., Algeria, off camel.

Status: Synonym and homonym of *Hippobosca camelina* Lch. 1817 (♯100).

camelopardalis (*Hippobosca*) Roubaud 1925: 466, fig. 1, ♀.

Type: Lost (?); not traceable, not now at Paris Mus.; from between Tabora and Tibu, Tanganyika, off *Giraffa camelopardalis* Linn.

Status: Synonym of *Hippobosca rufipes* Olf. 1816 (♯102).

[*canarensis*]. See under *canariensis.*

canariensis (*Olfersia*) Macquart 1840: 119, "♀". Misspelled as *canarensis* and *carolinensis* by some later authors.

Types: 1♂ (Paris Mus., coll. Macquart), Canary Is., no host record, labeled "Type" (printed), "No. 106. *Olfersia canariensis*" (in handwriting by Macquart), re-examined by Bequaert (1952: 219), here considered lectotype; 1 ex. (abdomen missing) in the same series, paratype, with no name label; 1♀ (Paris Mus., general coll.), this might not be of type-series, labeled "Cotype" (printed), "Thina" and with Bequaert's (1933) determination label. Types re-examined by Bequaert (1935a: 398, 1955: 408).

Status: Distinct species of *Pseudolynchia* (♯78).

canina (*Hippobosca*) Rondani 1878: 164, no sex given. Re-published in 1879: 24.

Types: 1♂ (Genova Mus.), here selected as lectotype, labeled "Sezzè. 25. 9. 67" and "*Hippobosca canina* Rndn." both handwritten by some museum assistant; 1♀ (Genova Mus.), paratype, "Persia setteute. 1862–63. Coll. S. Maria" (printed), no name label or host record; 1♂, 2♀♀ and 1 damaged ex. (abdomen missing) (Firenze Mus. ♯3413), paratypes, no locality or host data on pins, in 3 series, under cabinet labels "*canina* Rnd." in handwriting by Rondani. Original record (1879) reads "In tota Italia mammalibus variis molesta, et minus infrequens in *canibus.* Specimen observavi in Persia orientale lectum nostris omnino simile", whereas the 1878 records included Italy, S. Europe, Persia, S. and E. Africa. The type locality is here fixed as Italy.

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (♯99).

canina (*Hippobosca equina* var.) Dryensky 1926: 98, no sex given, as n. var. Name preoccupied, not *H. canina* Rndn. 1878.

Types: From Bulgaria, off dogs, probably in Sofia Mus., not seen by me.

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (♯99). Listed by Séguy (1936:

110) as a synonym of *H. equina* Linn.

capensis (*Hippobosca*) von Olfers 1816: 101, no sex given.

Type: ♀ (Berlin Mus. #5026), unique, labeled "Pr. b. sp. [Prom. bonae Spei,= Cape of Good Hope]. Krebs" and "*capensis* v. Olf.", no host data, re-examined by Speiser (1902b: 175). The original record reads "in cap. bonae Spei (Coll. Com. de Hoffm.)."

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (#99).

capensis (*Ornithobia*) Walker 1849: 1142, no sex given.

Type: Lost; not now traceable in Brit. Mus.; originally recorded from Natal, *ex* coll. Krauss, no host data.

Status: Probably a synonym of *Ornithophila metallica* (Schin.) 1864 (#12). In that case, it would have priority over the latter name. Once listed as distinct species of *Lipoptena* and once doubtfully assigned to *Ornithoica.*

capensis (*Olfersia*) Bigot 1885: 240, ♂.

Types: 3♂♂ (coll. Collin *ex* coll. Bigot) (The original description stated to have been based upon 1 unique specimen), Cap de Bonne-Espérance [Cape of Good Hope], no host record, re-examined by Speiser (1902b: 166) and Bequaert (1955: 410).

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78). Once listed as a distinct species of *Lynchia* and *Pseudolynchia.*

[*capreoli* (*Pediculus*) von Olfers 1816: 99]. Cited as a synonym of *Melophaga trifasciata* Olf. and authorship accredited to Frisch (1736: 15, pl. 2, tab. 5) who actually used no binomials in his pre-Linnean work. Also cited by Nitzsch (1818: 311) as synonym of his *Hippobosca* (*Lipoptena*) *cervina.*

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109) which was based upon Frisch's same figure. But technically *capreoli* Olf. has no nomenclatorial validity as does *cervi* Linn. and should have no priority over *capreoli* Rndn. (Art. 11d, Intern. Code 1961). Generally von Olfers' name was treated as a nomen invalidum in favor of Rondani's which was published 62 years later.

capreoli (*Lipoptena*) Rondani 1878: 152, ♀. Re-published in 1879: 14.

Types: 1♂, 1♀ (Firenze Mus. #3384), both labeled "Cipro" and placed under Rondani's cabinet label "*capreoli.* In Graecia···Ins. Cypri", no host record on labels or in original description but the name *capreoli* apparently suggesting the parasitism on *Capreolus capreolus* Linn. The ♀ is here selected as lectotype.

Status: Distinct species of *Lipoptena* (#108). Once listed as a variety of *L. cervi* (Linn.). For nomenclatorial validity, see discussions under *capreoli* Olf.

caprina (*Lipoptena*) Austen 1921: 122, ♀♂.

Types: Original series 7♂♂, 3♀♀: ♂-type and 5♂ and 2♀ paratypes (Brit. Mus. #1916. 52), from nr. Jerusalem, Palestine, off goat [*Capra hircus* Linn.], ♀-type and 1♂ paratype (Brit. Mus. #1916. 52), Ain Arik, 10 mi. NW of Jerusalem, on kid; both series re-examined by Bequaert (1942a: 100); whereabouts of the Snevce, Macedonia specimen

as mentioned in the original description, unknown. The ♀-type is to be considered lectotype.

Status: Synonym of *Lipoptena capreoli* Rndn. 1878 (#108). Wrongly listed under *Lynchia* in the Zool. Rec. for 1921.

capsoides (*Myiophthiria*) Rondani 1878: 154, no sex given.

Types: 2♀♀ and 1 ex. of unknown sex (abdomen mutilated) (Firenze Mus. #3388), no locality (the original description gave the Philippine Is. as the type locality) and host records on pins, placed under the cabinet label in Rondani's handwriting "*capsoides* n."; one of the ♀♀ is here selected as lectotype; 1♀ (Berlin Mus. *ex* coll. Osten Sacken), pregnant, paratype, labeled "*Myophthiria capsoides* Rond.", "Philippinen. Coll. Osten-Sack." and "D892."

Status: Distinct species of *Myophthiria* (#29). Once suppressed as synonym of *M. reduvioides* Rndn.

[*carolinensis*]. See under *canariensis*.

cervi (*Pediculus*) Linnaeus 1758: 611 (in part), no sex given, merely citing Frisch's (1736: 15, pl. 2, tab. 5) and Redi's (1671: pl. 5) figures as synonyms. The latter actually referred to an Anopluran (upper half of the plate) and a Mallophagan (lower half).

Types: Non-existing. Linnaeus did not provide any description for this species and almost certainly had no specimens then, hence there should be no types. Panzer (1798: pl. 15) was the first person to restrict *cervi* to the hippoboscid attacking deer in Germany, and Frisch's (*l. c.*) specimens were taken off "Rehbock" [*Capreolus capreolus* Linn.] in Germany too. Panzer's collection is probably in Genève Mus. from which a neotype may be selected. Another candidate for the neotype is 1♀ (Brit. Mus.), no locality, with name label in handwriting by Leach (1817). Linnaeus did not give definite locality (in 1761: 476, he recorded this species from Sweden) for his species but mentioned "habitat in *Cervo Elapho, Dama, Capreolo*", which are all found in Europe. Bequaert (1937: 94) fixed Sweden as the type locality.

Status: By conventional interpretation, a distinct species of *Lipoptena* (#109). Once assigned to *Melophagus*. The "*cervi* Linn" of Howard (1912) is referable to *Lipoptena paradoxa* Newst.; that of C. Dover (1921), to *L. efovea* Speis.; that of E. A. Lewis (1931), to *Lipoptena* sp. probably *sepiacea* Speis.; that of Fiasson (1943), etc., to *L. mazamae* Rndn.

cervi (*Hippobosca*) A. G. Olivier 1792: 92, no sex given, as n. sp.

Types: Lost. Originally from no definite locality (here fixed as France), off "cerf" [*Cervus elaphus* Linn.].

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109).

cervina (*Hippobosca* subgen. *Lipoptena*) Nitzsch 1818: 311, no sex given. As a substitute name for "*Pediculus capreoli* Frisch" (1736: 15, pl. 2, tab. 15) and *P. cervi* Panzer (1798: pl. 15).

Types: Frisch's specimens are no more traceable; Panzer's are probably in Genève Mus., not seen by me. For the type locality and host, see under *cervi* Linn. (*supra*).

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109).

chalcolampra (*Olfersia*) Speiser 1904a: 335, no sex given.

Type: ♀ (Genova Mus.), glued on card, right wing missing, "N. [New] Guinea S. E. Moroka 1300 m. VII–XI. 93. Loria", no host record, labeled by Speiser as type.

Status: Distinct species of *Lynchia* sen. Beq. (#65).

[*chalcomelenea*]. See under *chalcomelaena.*

chalcomelaena (*Lipoptena*) Speiser 1904c: 178, ♂♀. Misspelled as *chalcomelenea* or *chalcomelena* by some later authors.

Types: Lost; ♂♀, Sinai Penin., off "Tor" [*Capra ibex nubiana* F. Cuvier], formerly in Berlin Mus. Neotype ♀ (Wien Mus.), here selected, "Zelebor, Egypt", no host record, with name label in Speiser's handwriting; 5 ♂♂ (Wien Mus.), same data but without Speiser's name label, one of them with an additional label "*hirta* Lw. Egypt"; 1 ♂ (Wien Mus.), labeled "108", "Aegypt" and "*marginata* Lw. Egypt", determined by Speiser as *chalcomelaena.* Both *hirta* and *marginata* are manuscript names.

Status: Distinct species of *Lipoptena* (#110).

[*chalcomelena*]. See under *chalcomelaena.*

chilensis (*Ornithomyia*) Guérin-Méneville 1835: pl. 104 (5), no sex given. Text published in 1844: 556. As *chiliensis* in the text.

Type: Lost; originally from Chile, no host record, collected by the Coquille Exped., not now traceable in Paris Mus.

Status: By Speiser's (1905a: 348) and Bequaert's (1954: 220) interpretations, a synonym of *Ornithoctona fusciventris* (Wdm.) 1830 (#35). Once listed as a distinct species of that genus.

chilensis (*Ornithomyia*) Macquart 1843: 437 (=p. 280 of reprint), no sex given, as n. sp. Name preoccupied, not Guérin-Méneville 1835.

Type: Lost; there being even no pin-hole under the cabinet label of this species in the Macquart collection at Paris Mus. The original record reads "Du Chili, Communiqué par M. Guérin, et provenant du Voyage de la Coquille." See preceding entry.

Status: By Speiser's (1905a: 348) and Bequaert's (1954: 220) interpretations, a synonym of *Ornithoctona fusciventris* (Wdm.) 1830 (#35).

chilensis (*Ornithomyia*) E. C. Reed 1904: 152, no sex given, as n. sp. Name preoccupied (n. name: *O. paricella* Speis. 1905), not Guérin-Méneville 1835, not Macquart 1843.

Types: Original series 3 ex., now 1 ♂ (holotype), 1 ♀ (California Acad. Sci.), from Concepción, Chile, off *Diuca grisea* [*D. diuca diuca* Molina], re-examined by Bequaert (1954: 155) and perhaps also by Speiser (1905a: 349), not seen by me.

Status: Synonym of *Ornithomya parva* Mcq. 1843 (#17).

[*chiliensis*]. See under *chilensis* Guér.

chinensis (*Ornithomyia*) Giglioli 1864: 23, pl. 1 B(10), no sex given.

Type: ♀ (Genova Mus.), pregnant, unique, on slide, Amoy, Fukien, China, off *Turdus obscurus* [*T. pallidus obscurus* Gmel.], re-examined by Speiser (1905a: 349).

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (♯99).

chloropus (*Ornithomyia*) Bergroth 1901: 146, no sex given.

Types: Presumably lost. Original series 2 ♀♀, re-examined by Speiser (1905a: 350), from Tammela, S. Finland, off *Asio accipitrinus* [*A. flammeus flammeus* Pontopp.], not now in Helsinki Mus.

Status: Here listed as a distinct species of *Ornithomya* (♯14). Suppressed as synonym of *O. fringillina* Curt. by Bequaert and others.

columbae (*Ornithomyia*) Wiedemann 1824: 60, no sex given.

Types: Lectotype (Kϕbenhavn Mus. *ex* coll. B. W. Westermann), sex unknown, fixed by Zimsen (1954 Spolia Zool. Musei Hauniensis **14**: 30), from Java, no host record although the name clearly indicates its parasitization on *Columba*; 2 ♀♀ (Oxford Univ. *ex* coll. Westermann), paratypes, with no locality labels on pins.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (♯42). Once listed as distinct species of that genus and once as a variety of *plicata* (*nigricans*).

columbarum (*Stilbometopa*) Lutz IN Lutz, Neiva & Costa Lima 1915: 178, no sex given. Proposed tentatively as n. sp.

Types: In Inst. Osw. Cruz at Rio de Janeiro, from Minas Gerais, Espirito Santo and Piauhy, all in Brazil, off *Scardafella squamosa* [*S. squamata squamata* Lesson] and *Columba rufina sylvestris* Vieillot, partly re-examined by Bequaert (1955: 251), not seen by me.

Status: Synonym of *Stilbometopa podopostyla* Speis. 1904 (♯46).

comosa (*Ornithomyia*) Austen 1930: 560, ♂♀.

Type: Original series 17 ♂♂, 17 ♀♀, Pusa, Bihar, India, off *Riparia paludicola chinensis*, now ♂-type, ♀-type and 8 ♂ and 7 ♀ paratypes in Brit. Mus., 1 ♀ paratype in Harvard Univ. The ♀-type may be considered lectotype.

Status: Distinct species of *Ornithomya* (♯21).

[*confluens*]. See under *confluenta*.

confluenta (*Ornithomyia*) Say 1823: 103, no sex given. Emended as *confluens* by some later authors.

Types: Lost, not now traceable in Philadelphia Acad. Sci. and coll. Wiedemann. Originally recorded from the "USA.", off *Ardea candidissima* [*Leucophoyx thula thula* Molina]. As in cases of other hippoboscids described by this author, the type locality may be restricted as "between Arkansas and Rocky Mts." Bequaert (1954: 108, 112) suggested Florida; Johnson (1922: 80) suggested Pennsylvania; and Wiedemann gave Pennsylvania.

Status: According to Bequaert's (1954) interpretation, a distinct species of *Ornithoica* (♯2). Once assigned to *Anthoica* (error for *Ornithoica*). Listed by Falcoz (1929: 28) as a synonym of *O. turdi* Latr. The "*confluenta* Say" and "*confluens* Say" of Aldrich (1905) etc. is referable to *O. vicina* (Wk.)

conifera (*Lipoptena*) Speiser 1905a: 354, ♀♂.

Types: Lost; not now traceable in Berlin Mus. and elsewhere. Originally recorded from "Brazil", off *Mazama simplicicornis simplicicornis* Illiger.

Status: Synonym of *Lipoptena mazamae* Rndn. 1878 (#121).

coriacea (*Olfersia*) van der Wulp 1903: 430, pl. 13 (2, 2a), "♀ ?".

Types: Lectotype ♂ (Brit. Mus. #1903. 133), Mirandilla, Guatemala, no host record, selected by Austen (1903: 265), re-examined by Bequaert (1957: 482); 1 ♂ (Brit. Mus. #1903. 133), paratype, Presidio, Mexico, also no host record and also re-examined by Austen (*l. c.*) and Bequaert (*l. c.*).

Status: Distinct species of *Olfersia* (#85). Once assigned to *Pseudolfersia*. The paratype from Mexico is referable to *Lynchia albipennis* (Say) 1823 (#48).

corvi (*Hippobosca*) Scopoli 1763: 377, no sex given.

Type: Lost; originally recorded from Carniola, Austria, off *Corvus corax* Linn.

Status: By conventional interpretation, a synonym of *Ornithomya avicularia* (Linn.) 1758 (#13).

costaricensis (*Ornithomyia*) Swenk 1916: 134, no sex given.

Type: ♀ (Nebraska Univ.), unique, Juan Viñas, Costa Rica, no host record, re-examined by Bequaert (1954: 207), listed by Muma (1952: 14), not seen by me.

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (#41).

[*courtilieri*]. See under *courtilleri*.

courtilleri (*Olfersia*) (Fairmaire *in litt.*) Courtiller 1853: 196, pl. 15, no sex given. Misspelled as *courtilieri* and *curtillerii* by some later authors.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, with Bigot's handwritten label "*O. spinifera. Feronia* id. Leach. *Olfersia courtilleri* Fairmaire. Type. Sur *Tachypetes*. J. Bigot", re-examined by Bigot (1885: 229), Speiser (1902b: 179) and Bequaert (1957: 437). The original record is Saumur, France, off *Tachypetes minor* [*Fregata minor* Gmel.].

Status: Synonym of *Olfersia spinifera* (Lch.) 1817 (#90).

couturieri (*Lipoptena*) Séguy 1935a: 86, ♂♀.

Types: Holotype ♂ (Paris Mus.), labeled "Sur un Isard [*Rupicapra rupicapra pyrenaica* Bonaparte]", "Espagne, Mass de la Maladetta. VII. 1935. Dr. M. Couturier" and "Type" (printed) and with Seguy's name-label indicating it as type; allotype ♀, with all same labels as in holotype but with Séguy's name-label indicating it as a cotype; 1 ♂, labeled Séguy as cotype, same data, with mouthparts and genitalia mounted on slides #671 and 672 respectively; 1 ♂ with only printed "Cotype" label, no data on pin; 8 ex., with no labels on pins but placed at side of the type; all above in Paris Mus. and re-examined by Bequaert (1942a: 88); 1 further ♀ paratype in Harvard Univ.

Status: Distinct species of *Lipoptena* (#111).

crassipes (*Allobosca*) Speiser 1899a: 199, fig. 1, no sex given.

Types: Presumably destroyed. Original series 3 ex., Madagascar, off *Propithecus diadema* Bennett and *Lepilemur mustelinus* I. Geoffr., formerly in coll. O. Hilger.

Status: Distinct species of *Allobosca* (#104).

[*cryptocephala*]. See under *erythrocephala.*

crypturelli (*Microlynchia*) Bequaert 1938b: 346, figs. 1–2, ♀.

Types: Holo- and 2 paratypes, ♀♀ (Harvard Univ. #29434), La Vaca, Prov. Chiriqui, Panama, off *Crypturellus soui panamensis* Carriker; 1 ♀ paratype (U. S. Nat. Mus.), same data; allotype ♂ (described by Bequaert 1955: 381, fig. 74 D), Nova Teutonia nr. Itá, State Sa. Catharina, Brazil, off *Columba rufina sylvestris* Vieillot, also in Harvard Univ.

Status: Here listed as a distinct species of *Microlynchia* (#80). Possibly a synonym of *M. pusilla* (Speis.) (see Bequaert 1955: 366).

[*cubensis* (*Leptotena*) (Leach *in litt.*) Maa 1962: 613. Cuba]. Cited as a synonym of *Lipoptena mazamae* Rndn.

Status: Synonym of *Lipoptena mazamae* Rndn. 1878 (#121).

[*cunicosa* (*Hippobosca*) (Madarasz *in litt.*) Thalhammer 1899 Fn. Regn. Hungarici: 69. Hungary]. nom. nud.

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (#99). Wrongly listed by Bezzi (1905: 274) as a synonym of *H. equina* Linn.

[*curtillerii*]. See under *courtilleri.*

curvata (*Ornithoica*) Maa 1963. See Appendix for full description (#10).

cypseli (*Chelidomyia*) Rondani 1879: 16, no sex given.

Types: 1 pregnant ♀ (Firenze Mus. #3392), here selected as lectotype, no data, placed under cabinet label "*cypseli* m. ♀ ano spinoso" in handwriting by Rondani; 1 ♀ (unfed) (Firenze Mus. #3393), paratype, no data, placed under cabinet label "*cypseli* Rnd. ♂." Original record reads "In *Cypselis* et etiam in Hirundinibus totius Italiae."

Status: Synonym of *Crataerina hirundinis* (Linn.) 1758 (#23). Listed by Bezzi (1905) and others as a variety of *hirundinis.*

depressus (*Melophagus*) Say 1823: 104, no sex given.

Types: 1 ♀ (Wien Mus. *ex* coll. Winthem), glued on paper point, labeled "*depressus* Say. Pennsylvania", here considered lectotype. Other syntypes not now traceable at Philadelphia Acad. Sci. It is known that T. Say has sent Wiedemann some of his Diptera and that the coll. Winthem now at Wien Mus. was partly from Wiedemann. In all probability, the afore-mentioned specimen was sent by Say and formed the basis of Wiedemann's (1830: 614) redescription of this species as "*Melophaga depressa*...Aus Pennsylvania...In meiner Sammlung." Say, merely stating this species "inhabits *Cervus virginianus*" [*Odocoileus virginianus virginianus* Boddaert], did not give exact place of its capture, but Pennsylvania certainly cannot be accepted as the type locality. It may be noticed that in Wiedemann's (1830) work, the habitat of Say's species included was all given as Pennsylvania, apparently because Say was then residing there. However, in the introductory

remarks in the paper containing his descriptions of *depressa* and other hippoboscids, Say stated that the Diptera described therein were chiefly collected by himself during the Major Stephen H. Long Expedition to the Rocky Mts. It is therefore highly probable that the syntypes of *depressa* were off *Odocoileus* shot by the party at some point between Arkansas and the Rocky Mts. although this deer ranged at that time from the Atlantic to the Rocky Mts. (*cf.* Coquillett 1907: 291; Swenk 1916: 127). Bequaert (1957: 492, 498) suggested the types might have been from Colorado.

Status: Distinct species of *Lipoptena* (#118).

diomedeae (*Pseudolfersia*) Coquillett 1901: 379, no sex given.

Types: Holo- (#4431) and 2 paratypes, ♂♂ (U. S. Nat. Mus.), 1 ♂ paratype (Stanford Univ.), Albemarle I., Galapagos Is., off *Diomedea irrorata* Salvin, re-examined by Ferris & Cole (1922: 196, figs. 13–14) and Bequaert (1933d: 103, 1957: 444).

Status: Synonym of *Olfersia aenescens* C. G. Thms. 1869 (#89). Once listed as a distinct species of that genus and once as a synonym of *O. spinifera* (Lch.). The "*diomedeae* Coq." of Falcoz (1930: 46) is a mixture of *O. bisulcata* Mcq. and *O. fossulata* Mcq.

diomedeae (*Ornithoica*) Kishida 1932: 247, fig. 478, ♀.

Type: From Japan, off "ahodori" [*Diomedea albatrus* Pallas], in coll. Kishida, not seen by me.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (#13).

dioxyrhina (*Olfersia*) Speiser 1904d: 387, no sex given. Emended as *dioxyrrhina* by some later authors.

Type: Destroyed. From Simbang, Huon Penin., NE New Guinea, off *Rhiticeros plicatus ruficollis* Vieillot, formerly in Budapest Mus.

Status: Distinct species of *Lynchia* sen. Beq. (#71).

distenta (*Ornithoica*) Speiser 1902a: 332, no sex given.

Types: Lectotype ♀ (Milano Mus. *ex* coll. Bezzi), here selected, abdomen missing, with printed labels "Simbang, Huon Golf" and "New Guinea. Biro. 1898" and Speiser's handwritten label "*Ornithoeca stipituri* Schin. (=*distenta* Speis.)". Original series 20 ex., Simbang, Huon Penin., New Guinea, no host record, formerly in Budapest Mus., largely destroyed.

Status: Synonym of *Ornithoica stipituri* (Schin.) 1868 (#6).

distincta (*Ornithoica*) Kishida 1932: 245, fig. 475, ♀.

Types: From Japan, off "shobin-roi" [*Halcyon* spp.], in coll. Kishida, not seen by me.

Status: Synonym of *Ornithoica exilis* (Wk.) 1861 (#3).

[*doreia*]. See under *doreica.*

doreica (*Ornithomyia*) Walker 1861: 254, ♀. Misspelled as *doreia* by some later author.

Type: Presumably lost, not now in Brit. Mus. or Oxford Univ. Originally recorded from Dorey [=Manokwari], W. New Guinea, no host data.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42). Once listed as a variety of that species.

[*dromedariina*]. See under *dromedarina.*

dromedarina (*Hippobosca*) Speiser 1902b: 176, no sex given. As n. name for the N. African form attacking dromedaries [*Camelus dromedarius* Linn.], listed by Rondani (1878: 165, 1879: 26) under *H. camelina.* Emended as *dromedariina* by some later authors.

Types: 1 ♀ (Wien Mus.), here selected as lectotype, "Ffld. Sinai. 855" [coll. Frauenfeld. Sinai Penin. 1855], labeled by Speiser as "*Hipp. dromedarina* Speiser (=*camelina* L. det. Rond., nec Leach)", no host record; 1♂ (Wien Mus.), paratype, same data, but with no Speiser's label; 1♂ (Genova Mus.), paratype, "Tunisia, Tamegza. V. 1873. Abdul Kerim", label by Rondani "*Hippobosca camelina* Savgn." Besides these, 8 of the 9 specimens of *camelina* in coll. Collin *ex* coll. Bigot were determined by Speiser as *dromedarina.*

Status: Synonym of *Hippobosca camelina* Lch. 1817 (#100).

[*dubia* (*Lipoptena*) Rudow 1871 Zts. Ges. Naturw. 37 122, no sex given. Venezuela, off *Noctilio dorsalis*].

Status: Not a hippoboscid but streblid, now transferred to the genus *Paradyschiria.*

dukei (*Olfersia*) Austen 1911: 171, ♀.

Types: ♀ (Brit. Mus.), unique, Nsadzi I. in Victoria Lake, Uganda, off *Haliaeetus vocifer vocifer* Daud., re-examined by Bequaert (1955: 329, 1957: 578).

Status: Distinct species of *Lynchia* sen. Beq. (#51). Once suppressed by Bequaert (1955, *l. c.*) as a synonym of *L. nigra* Perty.

efovea (*Lipoptena*) Speiser 1905a: 352, ♂.

Type: ♂ (Berlin Mus.), unique, Ceylon, no host record.

Status: Distinct species of *Lipoptena* (#112).

[*egyptiaca*]. See under *aegyptiaca.*

[*equi*]. See under *equina.*

equina (*Hippobosca*) Linnaeus 1758: 607, no sex given. Misspelled or emended as *equi* by some later authors.

Types: Lost. Originally recorded from Europe and "N. America", off *Equus* and *Bos.* Actually *equina* has never established in the New World, and its type locality should be fixed as Sweden.

Status: By conventional interpretation, a distinct species of *Hippobosca* (#97).

Note: There are some specimens in the Paris Mus. *ex* coll. Macquart and in the coll. Collin *ex* coll. Bigot, labeled by Macquart as "*Hippobosca equina* Mcq." or "*H. equi* Macq." but he has never published such names as new.

erythrocephala (*Ornithomyia*) Leach 1817a: 13, pl. 27 (4–6), no sex given. Re-published in 1818: 559, pl. 27 (4–6). Misspelled as *cryptocephala, erythrocephalia, erytrocephala* and *erythrocephale* by some later authors.

Type: Lectotype ♀ (Brit. Mus.), fixed by Austen (1903: 263), with Leach's handwritten name label, from "Brazil", no host record, re-examined by Bequaert (1954: 203).

Status: Distinct species of *Ornithoctona* (#41). The "*erythrocephala* Lch." of Howard (1902: pl. 22, fig. 3) is referable to *O. nitens* (Bigot).

[*erythrocephale, erythrocephalia*]. See under *erythrocephala.*

erythropsis (*Olfersia*) Bigot 1885: 239, no sex given.

Type: ♂ (coll. Collin *ex* coll. Bigot), unique, New Caledonia, no host record, re-examined by Speiser (1902b: 165), Collin (*in* Bequaert 1933: 103) and Bequaert (1957: 444).

Status: Synonym of *Olfersia aenescens* C. G. Thms. 1869 (#89); once listed as a distinct species of *Pseudolfersia.*

[*erytrocephala*]. See under *erythrocephala.*

exilis (*Ornithomyia*) Walker 1861: 254, no sex given.

Types: Lectotype ♀ (Brit. Mus. #68. 4, *ex* coll. Saunders), fixed by Austen (1903: 263), in poor condition, glued on card, labeled "Dor. [Dorei or Dorey, =Manokwari in W. New Guinea] 36" and with Walker's handwritten name label, no host record, re-examined by Bequaert (1954: 114); 1 ex. (Oxford Univ.), paratype, in poor condition, glued on card, sex not determinable, labeled "Dor. 11", "*Ornithomyia exilis*" (in handwriting by Walker) and "*Ornithomyia exilis* Walker. Dorei. Wallace. E. Mus. Saund. 10 *d.*"

Status: Distinct species of *Ornithoica* (#3). Suppressed by Austen (*l. c.*) as a synonym of *O. beccariina* Rndn. and by Falcoz (1929: 28) as of *O. turdi* Latr. The "*exilis* Wk." of Bau (1929a: 247, 248, pt.) is referable to *O. beccariina* Rndn.

[*exonorata*]. See under *exornata.*

exornata (*Olfersia*) Speiser 1900: 562, no sex given. Misspelled as *exonorata* by Thompson (1936b: 316 footnote).

Type: ♂ (Genova Mus.), unique, glued on card, labeled "Sumatra. D. [Doloc] Tolong. XII. 1890. E. Modiglian" (printed) and "*Lynchia exornata* Speiser" (in Speiser's handwriting), no host record, re-examined by Bequaert (1952: 219) who stated it to be a ♀.

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78). Once listed as a distinct species of *Lynchia* and *Pseudolynchia.*

[*expressa*]. See under *impressa.*

falcinelli (*Olfersia*) Rondani 1879: 23, no sex given.

Type: ♀ (Firenze Mus. #3408), unfed, with no data on pin but placed under the cabinet label "*falcinelli* m. Melita. Creta" in handwriting by Rondani. The original record reads "Unicum exemplar observavi ad littora Insulae melita [Malta I.] lectum, ..." No host record.

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78). Once wrongly listed as a distinct species of *Microlynchia* by Bequaert (1938b: 349).

[*falconis* (*Ornithomyia*) Harris 1833 *in* Hitchcock, Rept. Geol. Miner. Zool. Bot. Massachusetts (1st edit.) : 594. Massachusetts, U S A.] nom. nud.
Status : Synonym of *Lynchia americana* (Lch.) 1817 (#49).

femorata (*Brachypteromyia*) Williston 1896 : 185, ♂.
Type : Lost, not now traceable in Amer. Mus. Nat. Hist. and Univ. Kansas. Originally recorded from Wyoming, U S A, off *Macropis melanoleucus* [*Aeronautes saxatilis saxatilis* Woodhouse].
Status : Synonym of *Myophthiria fimbriata* (Waterh.) 1887 (#32).

fera (*Melophagus ovinus* var.) Speiser 1908c : 444, no sex given.
Types : In the Wien Mus., there are several specimens from Caucasus off " Steinbock " [? *Capra caucasica* Güldenstadt & Pallas] determined by Speiser (probably prior to 1908) as *ovinus*. In case of the advisability of fixing such, a type for *fera* may be selected from that series. Actually Speiser did not use the name except in the work cited above.
Status : Synonym of *Melophagus ovinus* (Linn.) 1758 (#123).

ferrisi (*Lipoptena*) Bequaert 1935c : 170, as n. name for *L. subulata*, Ferris & Cole 1922 : 187, figs. 2 C, 4, ♀♂ (misinterpretation, not of Coquillett 1907).
Types : Holotype ♂, allotype ♀ (Stanford Univ.), on slides, selected by Bequaert (1937), from Mendocino County, California, U S A, off *Odocoileus hemionus columbianus* Richardson ; 5 ♂ and 3 ♀ paratypes (Stanford Univ.), on 4 slides, " California " off a " deer " ; 1 ♂ paratype (California Acad. Sci.), on slide, Mendocino County ; 1 ♀ paratype (CAS), alate, on slide, Mt. Wilson, California ; 1 ♀ paratype (Harvard Univ. *ex* coll. Ferris), alate, on slides, from " California. " These comprise the specimens actually seen by Ferris and Cole (*l. c.*) and the localities listed by them. Specimens from other localities (Brit. Colombia, Oregon, Montana and many places in California) and other sources, listed by Bequaert (1937 : 93–94) as paratypes and distributed in the Amer. Mus. Nat. Hist., Calif. Acad. Sci., Canadian Nat. Colln., Cornell Univ., Harvard Univ., Kansas Univ., Paris Mus., Univ. Brit. Colombia, etc. are not to be considered true paratypes.
Status : Distinct species of *Neolipoptena* (#122). The " *N. ferrisi* Beq. " of Herman (1945 : 17) is referable to *Lipoptena depressa* (Say).

ferrisi (*Austrolfersia*) Bequaert 1953a : 284, as n. name for *Ortholfersia tasmanica*, Ferris 1924b : 2, figs. 1–2, ♀♂ (misinterpretation, not of Wesché 1903).
Types : Lectotype ♂, allotype ♀ (Stanford Univ.), here selected, each on 2 slides, both from Evelyn, Queensland, Australia, off *Macropus stigmaticus* [*Thylogale stigmatica* Gould] ; 3♀ paratypes (Harvard Univ. *ex* Amer. Mus. Nat. Hist., det. Ferris), in alcohol but one of the wings on slide, same data as lectotype ; 1♀ paratype (Harvard Univ.), on 2 slides, Ravenshoe, Queensland.
Status : Distinct species of *Austrolfersia* (#95).

fimbriata (*Anapera*) Waterhouse 1887 : 164, fig., no sex given.
Type : ♀ (Brit. Mus. #87. 48), unique, Fort Wingate, New Mexico, U S A, off *Cypselus melanoleucus* [*Aeronautes saxatilis saxatilis* Woodhouse], re-examined by Austen (1926 : 359) and Fairchild (IN Bequaert 1954 : 177).

Status: Distinct species of *Myophthiria* (#32). Once assigned to the genus *Brachypteromyia.*

[*forsulata*]. See under *fossulata* (*Olfersia*).

fossulata (*Hippobosca*) Macquart 1843: 433 (=p. 276 of reprint), no sex given.

Type: ♀ (Paris Mus. *ex* coll. Macquart), unique, labeled "48/9061" and "No. 622. *hippobosca fossulata*", the latter in handwriting by Macquart, no data on pin, re-examined by Bequaert (1952: 218). The original record is evidently incorrect. It reads "Du Brésil ou du Chili, M. Gaudichaud. Muséum." The type locality is here fixed as India.

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (#99). Once wrongly synonymized with *H. variegata* Megerle.

fossulata (*Olfersia*) Macquart 1843: 434 (=p. 277 of reprint), no sex given. Misspelled as *forsulata* by Thompson (1936b: 316).

Type: ♀ (Paris Mus. *ex* coll. Macquart), unique, labeled "Muséum Paris. Brésil. Delalande", "Brésil. Delalande", "624" and "*Olfersia fossulata*", the last 2 labels in handwriting by Macquart, re-examined by Bequaert (1957: 469). The original record reads "Du Brésil. Muséum."

Status: Distinct species of *Olfersia* (#87). Once assigned to *Pseudolfersia.* The "*O. fossulata* Mcq." of Johnson (1924: 91) is a mixture of *Olfersia aenescens* C. G. Thms. and *O. sordida* Bigot; that of Peters (1936: 13) is referable to *O. fumipennis* (J. Sahlb.).

fradeorum (*Pseudolynchia*) Tendeiro 1951: 127, fig. 2, ♂♀.

Types: 5 ♂♂, 4 ♀♀, in alcohol, Maputo, Mozambique, off *Bubo africanus africanus* Temm., probably in coll. Tendeiro, not seen by me.

Status: Synonym of *Pseudolynchia garzettae* (Rndn.) 1879 (#79). Once suppressed as a synonym of *Ps. rufipes* (Mcq.) which is itself a synonym of *Ps. canariensis* (Mcq.).

[*francillioni*]. See under *francilloni.*

francilloni (*Hippobosca*) Leach 1817a: 8, pl. 26 (8–10), no sex given. Re-published in 1818: 554, pl. 26 (8–10). Misspelled as *francillioni* by some later authors.

Type: ♀ (Brit. Mus.), unique, fixed by Austen (1903: *in litt.*), with name label in Leach's handwriting, no locality or host record on pin and in original description, re-examined by Bequaert (1939b: 78). India is here fixed as type locality.

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (#99).

[*fringilla, -llae, -llaria, -llarum*]. See under *fringillina.*

fringillina (*Ornithomyia*) (A. Matthews *in litt.*) Curtis 1836: pl. 585, color fig. and figs. 2, 3, 4, 8, no sex given. Misspelled as *fringilla, fringillae, fringillaria, fringillarum,* etc. by some later authors. Wrongly dated by Bezzi, Falcoz and others as from 1824.

Types: 1 ♀ (Melbourne Mus.), fixed as lectotype and re-examined by Bequaert (1954: 146, fig. 28 F; IN Thompson 1936d: 91) and Thompson (1954: 19, figs, 1, 2, 6, 10), not seen by me; other syntypes lost. The original records are Weston-on-the-Green nr. Oxford, England, off yellow hammer [*Emberiza citrinella citrinella* Linn.], great titmouse [*Parus ma-*

jor newtoni Prazak] and robin [*Erithacus rubecula melophilus* Hartert].

Status: Distinct species of *Ornithomya* (#15). The "*fringillina* Curt." of Stadler (1948), etc. is referable to *O. biloba* Duf.

fulva (*Hippobosca*) Austen 1912: 417, ♀. Misspelled as *fusca* by Bequaert (1954: 31).

Type: ♀ (Brit. Mus. #1912. 157), unique, Nawalia, NE Rhodesia, S. Africa, off *Alcelaphus lichtensteini* Peters, re-examined by Bequaert (1939b: 82).

Status: Distinct species of *Hippobosca* (#98).

[*fulviforns*]. See under *fulvifrons.*

fulvifrons (*Ornithomyia*) Walker 1849: 1145, no sex given. Misspelled by Gourdey (1926: 89) as *fulviforns.*

Type: ♂ (Brit. Mus. #47. 62, *ex* coll. P. H. Gosse), unique, fixed by Austen (1903: 263), Jamaica, off *Ortyx virginiana* [*Colinus virginianus* Linn.], with no Walker's name label, re-examined by Bequaert (1955: 254).

Status: Distinct species of *Stilbometopa* (#43).

fumipennis (*Lynchia*) J. Sahlberg 1886: 150, fig., ♂♀.

Types: 2 ♂♂, 1 ♀ (Helsinki Mus.), syntypes, Thusby, Finland, 18. V. 1882, probably taken by author, off *Pandion haliaetus haliaetus* Linn.; 1 ♀ (Helsinki Mus.), syntype, Kuopio, *ex* coll. Nordqvist; 1 ♂ each of both series re-examined by Bequaert (1952: 220, 1957: 455); syntype now at Helsinki Mus. not seen by me; 1 ♂ syntype (Harvard Univ. *ex* Helsinki Mus.). In personal communication (18. VII. 1962), Dr. W. Hackman of that Museum stated that he was selecting one of the ♂♂ from Thusby as the lectotype.

Status: Distinct species of *Olfersia* (#88). Once assigned to the genus *Pseudolfersia.*

fur (*Ornithomyia*) Schiner 1868: 374, no sex given.

Types: 1 ♂ (Wien Mus.), here selected as lectotype, labeled "*Hirundo.* Cap. 5/10", "D" (printed on pinkish paper), and with Schiner's name label; 1 ♀ (Wien Mus.), paratype, "Zelebor [in Egypt]. Novara", "D", with no Schiner's label. The original record reads "Zwei Stücke vom Cape der guten Hoffnung [=Cape of Good Hope] welche auf *Hirundo cucullata* Bodd. gesammelt wurden."

Status: Distinct species of *Ornithomya* (#22).

furtiva (*Microlynchia*) Bequaert 1955: 382, fig. 75 A–C, ♀.

Type: ♀ (Harvard Univ. #29239), unique, in alcohol, El Cayo, Brit. Honduras, off *Crypturellus boucardi boucardi* P. L. Sclater.

Status: Distinct species of *Microlynchia* (#81).

fusca (*Ornithomya*) (Macquart *in litt.*) Guérin-Méneville *in* Guérin-Méneville & Percheron 1838: [2] (unnumbered pagination), pl. 6, no sex given.

Type: Not traceable, possibly same as that of the next entry; no locality and host records in original description.

Status: Uncertain. Possibly a synonym of *Lynchia americana* (Lch.) 1817 (#49) or *Ornithoctona fusciventris* (Wdm.) 1830 (#35). Once doubtfully assigned to *Ornithoctona*

(see Bequaert 1933b: 79).

fusca (*Olfersia*) Macquart 1845: 346 (=p. 218 of reprint. 1846), no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, "Nova Grenada" [probably Colombia], with Macquart's handwritten label "*Olfersia fusca* Macq. n. sp.", no host record, re-examined by Speiser (1902b: 177) and Bequaert (1955: 301). The original record reads "De la Nouvelle-Grenade. Collection de M. Bigot."

Status: Synonym of *Lynchia americana* (Lch.) 1817 (#49). Once listed as a distinct species of that genus. The "*fusca* Mcq." of Lutz (1915: 182) is referable to *Lynchia angustifrons* (Wulp); that of Knowlton *et al.* (1939: 19), to *L. nigra* (Perty).

[*fusca* (*Hippobosca*)]. See under *fulva.*

[*fuscicornis*]. See under *fuscipennis* (*Ornithomyia*) Bigot.

fuscipennis (*Olfersia*) Macquart 1835: 640, no sex given.

Type: Lost; not now traceable in Paris Mus. and coll. Collin; original record "Du Brésil; Muséum de Paris", no host data.

Status: Synonym of *Lynchia nigra* (Perty) 1833 (#54), by Bequaert's (1955: 325) interpretation.

fuscipennis (*Ornithomyia*) Bigot 1885: 242, no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, with Bigot's handwritten label "*O. Fuscicornis* ♂ (nec *Fuscipennis*). Colombie. J. Bigot", no host record, re-examined by Speiser (1902b: 168). The name *fuscicornis* is unpublished and is evidently an unpublished emendation to avoid confusion with *Olfersia fuscipennis* Mcq. The type is actually a ♀, not ♂ as assumed by Bigot. The locality "Colombia" is certainly incorrect and the type locality is here fixed as Australia.

Status: Distinct species of *Ornithomya* (#16).

fusciventris (*Ornithomyia*) Wiedeman 1830: 611, no sex given.

Type: ♀ (Wien Mus. *ex* coll. Winthem), unique, Kentucky, no host record, re-examined by Bequaert (1954: 220), not seen by me. The only specimen of this species now in the Wien Mus. is 1 ♀, Süd Amerika, with no other data, wrongly determined by Speiser as *Ornithoctona parva* Mcq. The Copenhagen Mus. has a ♀ labeled "Brasilia. Lund Mus. Colom. *Fusciventris* Wied."

Status: Distinct species of *Ornithoctona* (#35).

galapagoensis (*Microlynchia*) Bequaert 1955: 384, fig. 76 A–D, ♀.

Types: Holo- and 1 paratype, ♀♀ (Harvard Univ. #29432), in alcohol, Academy Bay, Indefatigable I. and Hood I., Galapagos Is., off *Nesopelia galapagoensis* Gould and *Buteo galapagoensis* Gould respectively.

Status: Distinct species of *Microlynchia* (#83).

garzettae (*Olfersia*) Rondani 1879: 23, no sex given.

Type: ♀ (Firenze Mus. #3407), unique, pregnant, no data on pin but placed under cabinet label in Rondani's handwriting "*garzettae* m. It. sup. [Italia superiore]". Original

record reads "Specimen unicum observavi in Insubria captum,...".

Status: Distinct species of *Pseudolynchia* (#79). Once listed as a distinct species of *Lynchia.*

gemina (*Ornithomyia*) C. G. Thomson 1869: 611, ♀.

Type: ♀ (Stockholm Mus. *ex* coll. Kinb.), pregnant, unique, Callao, Peru, no host record, no name label by Thomson on pin, re-examined by Speiser (1904b: 82) and Bequaert (1954: 203).

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (#41).

geniculata (*Ornithomyia*) Bigot 1892: 49, "♀♂."

Types: 3 ♀♀ (not of both sexes as Bigot assumed) (coll. Collin *ex* coll. Bigot), off *Pharomachrus mocino costaricensis* Cabanis, one of them with Bigot's handwritten label "*Ornithomyia geniculata.* ♂♀. n. sp. Mai 1892...J. Bigot...Costa Rica" should be considered lectotype; all re-examined by Speiser (1902b: 167, 1904d: 394) and Bequaert (1954: 232).

Status: Synonym of *Ornithoctona nitens* (Bigot) 1885 (#40). Once listed as a distinct species of the genus *Ornithopertha.*

gestroi (*Ornithomyia*) Rondani 1878: 156, ♀. Re-published in 1879: 18.

Types: 2 ♀♀ (1 pregnant) (Genova Mus.), "Galita. Agosto 1877. Violante" "*Falco Eleonorae*", both in handwriting by some museum assistant, no Rondani's name label, the pregnant ♀ was selected by Guiglia (1957: 196) (the other ♀ was assumed by her to be ♂) as lectotype; 1 ♀ (Genova Mus., general coll.), paratype, "Tunisia. Galita. VIII. 1877. Violante", with Speiser's determination label; 1 ♂ (Firenze Mus. #3399), paratype, same data as lectotype, placed under cabinet label in Rondani's handwriting "*gestroi* m. su *Falco eleonorae* Rnd."; 1 ♀ (Harvard Univ.), pregnant, paratype, some data as lectotype.

Status: Distinct species of *Ornithophila* (#11). Listed by Falcoz (1929: 30) and Bequaert (1941: 260) as a synonym of *O. metallica* (Schin.).

gracilis (*Lipoptena*) Speiser 1903c: 121, ♀.

Type: ♀ (Brit. Mus.), unique, in alcohol, Jalor, Patani State, Peninsular Thailand, off *Tragulus kanchil affinis* [*T. javanicus affinis* Gray], re-examined by Bequaert (1942a: 138).

Status: Distinct species of *Lipoptena* (#119).

grahami (*Lipoptena* subgen. *Lipoptena*) Bequaert 1942a: 81, fig. 6 A–C, ♀♂.

Types: Holotype ♀, allotype ♂, 2 ♂ paratypes (U. S. Nat. Mus.), 1 ♂ paratype (Harvard Univ.), Kuan-chien [Kwanhsien] and Uenchuan Shien [Uenchuan hsien], Szechuan, W. China, no host record.

Status: Distinct species of *Lipoptena* (#113).

guimaraesi (*Lipoptena* subgen. *Lipoptenella*) Bequaert 1957: 504, fig. 102 A–D, ♀♂. First published as a nom. nud. in 1953a: 314, 317.

Types: Largely in Dept. Zool., São Paulo, few paratypes in alcohol in Harvard Univ. Original series, 5 ♂♂, 11 ♀♀ (incl. holotype ♀, allotype ♂) and 7 ex. of undetermined

sex, from San Domingo (holo- and allotypes) and Pindaiba, Rio das Mortes, State Matto Grosso and Corrego da Saudade, State Goyaz, both in Brazil, off *Ozotoceros bezoarticus* J. E. Gray.

Status: Distinct species of *Lipoptena* (#120).

[*haitensis*]. See under *haitiensis.*

haïtiensis (*Ornithomyia*) Bigot 1885: 242, no sex given. Misspelled as *haitensis*, *hatamensis* and *hatiensis* by some later authors.

Type: ♂ (coll. Collin *ex* coll. Bigot), unique, Haiti, no host record, re-examined by Speiser (1902b: 168) and Bequaert (1954: 204).

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (#41). Once listed as a distinct species of that genus.

hatamensis (*Ornithomyia*) Rondani 1878: 158, no sex given.

Types: Lectotype ♀ (Genova Mus.), fixed by Guiglia (1957: 196), "N. Guinea. Hatam. VI. 1875. Beccari", with Rondani's handwritten name label, no host record, re-examined by Bequaert (1952: 219); 1♀ (Firenze Mus. #3402), paratype, with no name label on pin but same data as in lectotype, placed under cabinet label in Rondani's handwriting "*Ornithomya hatamensis* Rnd." Hatam is a small village SW of Manokwari, W. New Guinea.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

[*hatamensis* Bigot, *hatiensis*]. See under *haitiensis.*

hirsuta (*Hippobosca*) Austen 1911: 169, fig. 1a, ♂♀.

Types: 3♂♂, 2♀♀ incl. ♂-type and ♀-type (Brit. Mus.), Mohokya at Toro Plain, and NE shore of Lake Ruisamba, both in Uganda, off *Kobus defassa* Rüppell, re-examined by Bequaert (1939b: 86). The ♀-type may be considered lectotype.

Status: Distinct species of *Hippobosca* (#101).

hirsuta (*Lynchia*) Ferris 1927a: 249, ♀♂, figs. 1 (mislabeled as for *americana*), 4 (not fig. 3 which was intended for *americana*).

Types: Holotype ♀ (Stanford Univ.), on 2 slides, from Stanford, California, U S A, off *Lophortyx californica californica* Shaw; allotype ♂ and 1 ♂ paratype (Stanford Univ.), on slides, same locality, off "valley quail" [*Toxostoma redivium redivium* Gambel]; all re-examined by Bequaert (1955: 355).

Status: Distinct species of *Lynchia* sen. Beq. (#57).

[*hirta* (*Lipoptena*) (Loew *in litt.*) Speiser 1905a: 354]. Cited as a synonym of *L. chalcomelaena* Speis.

Status: Synonym of *Lipoptena chalcomelaena* Speis. 1904 (#110).

hirtella (*Melophaga*) von Olfers 1816: 99, no sex given. As a substitute name for *Hippobosca ovina* Linnaeus and other authors.

Type: Lost; not now traceable in Berlin Mus. Originally described off sheep, from

no definite locality [presumably Germany].

Status: Synonym of *Melophagus ovinus* (Linn.) 1758 (#123).

hirtisternum (*Ornithoica*) Maa 1963. See Appendix for full description (#10a).

hirundinis (*Hippobosca*) Linnaeus 1758: 607, no sex given. Emended as *hirundinum* by P. Rossi (1790: 337).

Type: Lost. Originally recorded off *Hirundo*, no locality given, presumably from Sweden.

Status: Distinct species of *Crataerina* (#23), by conventional interpretation. Once assigned to *Chelidomyia*, *Ornithomya* and *Stenepteryx*. The "*hirundinis* Fabr." of Panzer (1794: pl. 24) is referable to *C. pallida* (Latr.).

[*hirundinum*]. See under *hirundinis*.

hoffmannae (*Ornithomyia* subgen. *Pseudornithomyia*) Bequaert 1954: 158, figs. 31 F–I, 32, ♀♂.

Types: Holotype ♀ (Nat. School of Biol. Sci., Mexico City), not seen by me; allotype ♂ in alcohol and 1 wing of the holotype on slide (Harvard Univ.); both from Cacahoatán, State Chiapas, Mexico, off *Buteo nitidus plagiatus* Schlegel.

Status: Distinct species of *Ornithomya* (#19).

holoptera (*Olfersia*) Lutz IN Lutz, Neiva & Costa Lima 1915: 184, no sex given.

Types: In Inst. Osw. Cruz, Rio de Janeiro, not seen by me. Original series 3 ex. of undetermined sex, from State Rio de Janeiro, Brazil, off *Rhynchotus rufescens rufescens* Temm. and *Aramides saracura* Spix. The first (presumably so) ♂, not designated as allotype, was described by Bequaert (1957: 578) from La Candela, Dept. Huila, Colombia, off *Thamnophilus unicolor grandior* Hellmayr.

Status: Distinct species of *Lynchia* sen. Beq. (#58).

hopkinsi (*Lipoptena* subgen. *Lipoptena*) Bequaert 1942a: 106, fig. 7 F–I, ♀♂.

Types: Holo- (♀) and allotype (♂) and most paratypes in Harvard Univ., few paratypes in Brit. Mus. and Tervuren Mus. Original series 3 ♂♂, 10 ♀♀, Nyarusanza, Kigezi District, and Entebbe, Uganda; N'Gong, Kenya; Kibati, Kivu District, Congo; off *Cephalophus nigrifrons kivuensis* Lönnberg, *C. caeruleus aequatorialis* Matschie, *Nesotragus moschatus* von Dueben and *Tragelaphus scriptus* Pallas.

Status: Distinct species of *Lipoptena* (#114).

hova (*Ornithomyia*) Bigot 1885: 241, no sex given.

Types: 2 ♀♀ (coll. Collin *ex* coll. Bigot), Madagascar, no host record, re-examined by Speiser (1902a: 166) and Bequaert (1952: 219).

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

ibicis (*Lipoptera*) (sic) Theobald 1906: 88, figs. 45–47, ♀♂. As "n. sp.?" Misspelled as *icibis* by Séguy (1936: 118).

Types: 1 ♂, 1 ♀, on slides (whereabouts unknown), Red Sea Prov., Sudan, off ibex [*Capra ibex nubiana* F. Cuvier]. The 11 ex. (Brit. Mus. #1905. 329), glued on cards,

"Soudan, Port Soudan, Red Sea, *ex* Ibex. 1905. E. S. Crespin", "*Lipoptena ibicis* Theob." perhaps are syntypes or have been seen by Theobald, although the name labels are apparently not in his handwriting.

Status: Synonym of *Lipoptena chalcomelaena* Speis. 1904 (#110).

idonea (*Ornithoctona*) Falcoz 1929: 40, figs. 4–6, ♀.

Types: Lectotype ♀ (Paris Mus.), here fixed, labeled "Muséum Paris. Reiche 136–38", "136/38" and with Falcoz's name label; original series 3 ♀♀, Madagascar, off *Leptosoma discolor* and "Africa", no host record; whereabouts of the other 2 syntypes unknown, presumably lost.

Status: Synonym of *Ornithoctona laticornis* (Mcq.) 1835 (#36).

impressa (*Olfersia*) Bigot 1885: 237, no sex given. Misspelled as *expressa* by Schuurmans Stekhoven (1954: 395).

Types: From California, USA, no host record. There are in coll. Collin *ex* coll. Bigot at present 2 specimens of this species. The one (♂) placed under the cabinet label "*Olfersia impressa* Bigot. California" and with no collection data but a round label of colored paper on pin is regarded by me as the true type. The another (♀), placed between genera *Hippobosca* and *Olfersia* (but under no appropriate specific cabinet label) and with collection data "California. Lord Walsingham. 4/73" on pin but no round label of colored paper, is probably later addition. The original record reads "California.—1 spécim." The types have been re-examined and redescribed by Speiser (1902b: 163). Bequaert (1955: 245) also re-examined the same 2 specimens but reached a different conclusion than mine: "The specimen which I saw in 1951 labelled as type (sic) is a male (sic) taken in California by Lord Elsingham (sic) in 1873...also a female of this species, from the same source (sic), so that the original description was presumably based on both sexes (sic)."

Status: Distinct species of *Stilbometopa* (#44).

inocellata (*Ornithomyia*) Ferris 1930a: 275, figs. 1–2, ♀♂.

Types: Holotype ♀ (Stanford Univ.), on slide, Anderstepoort [error for Onderstepoort], Pretoria, S. Africa, off *Petrochelidon spilodera* Sund.; whereabouts of allotype ♂ unknown.

Status: Synonym of *Ornithomya fur* Schin. 1868 (#22).

intertropica (*Ornithomyia*) Walker 1849: 1144, no sex given.

Types: Lectotype ♀ (Brit. Mus. #45. 63, *ex* coll. C. Darwin), selected by Austen (1903: 264) and re-examined by Bequaert (1955: 326), left wing missing, from Galapagos Is., no host record, with no name label by Walker; 1 ♂, 1 ♀ (Brit. Mus.), paratypes, same data as lectotype.

Status: Synonym of *Lynchia nigra* (Perty) 1833 (#54). Once listed as a distinct species of *Lynchia*, *Olfersia* and *Ornithoponus*. The "*intertropica* Wk." of Swenk (1916: 129, 130) etc. is referable to *Lynchia albipennis* (Say).

japonica (*Lipoptena* subgen. *Lipoptena*) Bequaert 1942a: 84, fig. 6 D–E, ♂.

Type: ♂ (Harvard Univ.), unique, in alcohol, Hondo, Japan, off *Capricornis crispus* Temm.

Status: Distinct species of *Lipoptena* (#115).

javana (*Ornithomyia*) Jaennicke 1867: 406, pl. 44 (14), ♀. Misspelled as *javanica* by Bau (1922: 11).

Type: No host record. Whereabouts uncertain, the original record reads "Java (Fritz)...Coll. v. Heyden", thus now possibly in Senckenberg Mus.

Status: Synonym of *Ornithoctona australasiae* (Fabr.) 1805 (#34). Once listed as a distinct species of that genus.

[*javanica*]. See under *javana*.

kanakorum (*Ornithomyia*) Bigot 1885: 244, no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, New Caledonia, no host record, re-examined by Speiser (1902b: 170) and Bequaert (1952: 219).

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42). Once listed as distinct species of that genus.

kibitaki (*Ornithoica*) Kishida 1932: 246, fig. 477, ♀.

Type: From Japan, off "kibitaki" [*Zanthopygia narcissina narcissina* Temm.], in coll. Kishida, not seen by me.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (#13).

[*kirbianum*]. See under *kirbyanum*.

kirbyanum (*Oxypterum*) Leach 1817a: 17, pl. 25 (15, 16), no sex given. Re-published in 1818: 563, pl. 25 (15, 16). Misspelled as *kirbianum* and *kyrbiana* by some later authors. The name *Oxypterum kirbyanum* was also published by Kirby & Spence in 1817 (month?). See discussion under *Oxypterum*.

Type: ♀ (Macleay Mus., Sydney), unique, with no collection data on pin (The original description gave Suffolk, England, no host record) but name label "*Oxypterum acuminatum* Kirby" in handwriting by Leach. The name *acuminatum* has never been published (*cf.* Maa 1962: 597).

Status: Synonym of *Crataerina pallida* (Latr.) 1812 (#27). Once listed as a distinct species of *Anapera*, *Chelidomyia* and *Crataerina*, and once as a variety of *pallida*.

[*kyrbiana*]. See under *kirbyanum*.

[*lagapodis*]. See under *lagopodis*.

lagopodis (*Ornithomyia*) Sharp 1907: 59, no sex given. Misspelled as *lagapodis* by S. Smith (1950: 149).

Types: Original series 26 ex. The following are now at Brit. Mus.: 2 ♀♀ (B. M. #1936. 92), labeled as ♂♀, pinned side by side on a piece of cork, with Sharp's label "*Ornithomyia lagopodis*. Types. D. S. [David Sharp]. Caithness. X. 1907. Duff Dunbar", the right-side ♀ should be selected as lectotype; 3 ♂♂, 4 ♀♀ (B. M. #1907. 294), paratypes, "*ex* grouse [*Lagopus scoticus*]. Rec'd from D. Sharp. Thulachan, Caithness, N. B. [Nethy Bridge, Inverness-shire, in N. Scotland], 12–24. VIII. 1907. Mrs. L. Duff-Dunbar";

3 ♀♀ (B. M. #1919. 303 *ex* coll. F. C. Adams), paratypes, "Caithness. VIII. 1907. D. Sharp"; 9 ♂♂, 6 ♀♀, in alcohol, "Thulachan, Caithness, N. B. 12–24. Aug. 1907. Rec'd from D. Sharp." The original description included Blair Atholl (in N. Perthshire) as one of the type localities, but no such specimens now at Brit. Mus. 1 ♂, 1 ♀ paratypes (Harvard Univ. *ex* Brit. Mus.), Caithness, re-examined by Bequaert (1954: 148, fig. 28 I). One more syntype (Scottish Mus., Edinburgh), sex undetermined, from Caithness, not seen by me but re-examined by Hill (1962: 16).

Status: Synonym of *Ornithomya fringillina* Curt, 1836 (#15), or perhaps more correctly, *chloropus* Bergr. 1901 (#14). Synonymized by Bequaert (1954: 145) with *O. fringillina.*

laticornis (*Ornithomyia*) Macquart 1835: 642, no sex given. Re-published as "Nob. S. à B." 1843: 436 (=p. 279 of reprint), pl. 39 (6).

Types: Lectotype ♀ (coll. Collin *ex* coll. Bigot), abdomen partly damaged, fixed by Bequaert (1953b: 90), with Macquart's handwritten label "*laticornis* Macq." and Bigot's "Coll. Serville. C. B. Spei [=Cape of Good Hope]? Macq. Suite"; 1 ♂, 2 ♀♀ (coll. Collin *ex* coll. Bigot), placed under a separate cabinet label by Bigot as from "Nov. Granada. Macq. Suite nom't" and labeled by Macquart as *laticornis.* These Nova Granada specimens are not conspecific with the lectotype but are apparently later addition, the ♂ is referable to *Stilbometopa ramphastonis* Ferr. whereas the ♀♀, to *Ornithoctona erythrocephala* (Lch.). The original description gave "Du Cube ou cap du Bonne-Espérance" as the type locality, no host record, and has been apparently based upon a mixture of 3 species. Following the fixation of the lectotype, Cape of Good Hope proves to be the correct type locality. Both lectotype and Nova Granada specimens have been re-examined by Speiser (1902a: 328) and Bequaert (*l. c.*).

Status: Distinct species of *Ornithoctona* (#36).

Note: The "S. à B." placed after "Nob." at the heading of original description apparently stands for "Suites à Buffon", *i. e.*, Macquart's (1835) Histoire naturelle des Insectes, Suites à Buffon, Diptères, tome 2. The same "S. à B." for *Olfersia testacea* Mcq. (*q. v.*) is a mistake and should be deleted as it was not described in that work.

[*laticornis* (*Hippobosca*) Macquart 1843: 452 (=294 of reprint), explanation for pl. 36 (6) which has been intended for *H. orientalis* Mcq. as indicated in the text of the latter on p. 432 (=275 of reprint)]. *lapsus calami.*

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (#99).

latifacies (*Lynchia*) Bequaert 1955: 302, fig. 56 A–E, ♂♀.

Types: Holotype ♂ (Harvard Univ.), Tabatinguera, State São Paulo, Brazil, no host record; allotype ♀ (Fundacion M. Lillo, Tucuman), Paso Yobai, Caaguazú, Paraguay, off *Piaya cayana macroura* Gambel; allotype not seen by me.

Status: Distinct species of *Lynchia* sen. Beq. (#52).

legtersi (*Stilbometopa*) Bequaert 1955: 256, figs. 46 E, 48 D, 49 D, 50 J, N, ♀♂.

Types: Holotype ♀ (on slide, right wing only), allotype ♂, 1 ♀ paratype (Harvard Univ.), 1♂ and 1♀ paratypes (Fundacion M. Lillo, Tucuman). Type localities: Xocempich nr. Chichen-Itzá, Yucatán, Mexico (holotype), no host record; Pesquería La Gloria, Arriaga,

State Chiapas, Mexico, off *Ortalis vetula poliocephala* Wagler; Chapada, State Matto Grosso, Brazil; San Ignacio, Dept. Anta, Prov. Salta, Argentina (allotype), off *Ortalis canicollis canicollis* Wagler. The original description stated that the allotype was in the Fundacion M. Lillo. Whereabouts of the holotype (except right wing) unknown (? in alcohol at Harvard Univ.) Material at Fundacion M. Lillo not seen by me.

Status: Distinct species of *Stilbometopa* (#45).

leptoptera (*Lynchia*) Maa 1963. See Appendix for full description (#72a).

[*ligaoides, ligeoides*]. See under *lygaeoides.*

[*lividicola*]. See under *lividicolor.*

lividicolor (*Olfersia*) Bigot 1885: 238, no sex given. Misspelled as *lividocolor* and *lividicola* by some later authors.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, Brazil, no host record, re-examined by Speiser (1902b: 164) and Bequaert (1955: 409).

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78). Once recognized as a variety of *Ps. brunnea* (Latr.) and of *Ps. maura* (Bigot), and once as a distinct species of *Lynchia.*

[*lividocolor*]. See under *lividicolor.*

lonchoptera (*Crataerina*) von Olfers 1816: 102, no sex given. As a substitute name for "*Hippobosca hirundinis*" of authors, not of Linnaeus.

Type: Lost. From no definite locality, off "nidis hirundinum." The type locality may be fixed as Germany.

Status: Synonym of *Crataerina pallida* (Latr.) 1812 (#27).

longipalpis (*Olfersia*) Macquart 1835: 630, no sex given. Misspelled as *longipalpus* by van der Wulp (1897: 144).

Type: Lost; not now traceable in Paris Mus.; originally described from Java, no host record.

Status: Distinct species of *Lynchia* sen. Beq. (#72), by conventional interpretation.

[*longipalpus*]. See under *longipalpis*

longipennis (*Hippobosca*) Fabricius 1805: 338, no sex given.

Types: 2 ex. (Kϕbenhavn Mus. *ex* Mus. Dom. Lund), sex unknown, Tranquebar, no host record, re-examined by Bequaert (1939b: 78), not seen by me.

Status: Distinct species of *Hippobosca* (#99).

longipennis (*Crataerina*) Austen 1926: 357, ♂♀.

Types: 1 ♂, 1 ♀ (Brit. Mus. #1915. 282), both labeled as types, Gokteik Cave, N. Shan States, Burma, off *Micropus* [*Apus*] *pacificus cooki.* The ♀ may be selected as lectotype.

Status: Synonym of *Crataerina melbae* (Rndn.) 1879 (#25).

longirostris (*Olfersia*) van der Wulp 1897: 144, no sex given.

Types: Destroyed. Original series 3 ex., Kala-Wewa and Madatugama, both in Ceylon, no host record, formerly at Budapest Mus., re-examined by Speiser (1904b: 88).

Status: Synonym of *Lynchia longipalpis* (Mcq.) 1835 (#72).

lygaeoides (*Myiophthiria*) Rondani 1878: 155, no sex given.

Types: Lectotype ♂ (Genova Mus.), fixed by Guiglia (1957: 195), glued on card, "Amboina. 1873. O. Beccari", no host record, with Rondani's handwritten label "*Myiophthiria Ligaoides* (sic) Rnd."; 1 ♀ (Firenze Mus. #3386), paratype, same data, placed under cabinet labels in handwriting by Rondani "*Myiocoryza*" and "*Nabidoides* n. *ligeoides* (sic) m." The name *Nabidoides* has never been published.

Status: Distinct species of *Myophthiria* (#30).

macleayi (*Feronia*) Leach 1817a: 12, no sex given. Re-published in 1818: 558.

Type: Lost; not now traceable at Brit. and Macleay Mus. Originally recorded from Australia, no host data.

Status: Distinct species of *Ortholfersia* (#93), by Paramonov's (1954) interpretation. The "*macleayi* Lch." of Walker (1849: 1141) is referable to *Ornithomya fringillina* Curt.; that of Froggatt (1900: 1901, figs. 3, 4), to *O. fuscipennis* Bigot.

macquartii (*Olfersia*) Rondani 1878: 160, no sex given. Emended as *macquarti* by some later authors.

Type: ♂ (Firenze Mus. #3401), unique, placed under Rondani's handwritten cabinet label "*Olfersia macquartii* m. Nova Grenada", no host record, stated in original description to have been received from Macquart as *O. fusca* Mcq., but no such label on pin.

Status: Synonym of *Lynchia nigra* (Perty) 1833 (#54). Once wrongly interpreted as synonymous with *L. americana* (Lch.).

maculata (*Hippobosca*) Leach 1817a: 7, pl. 26 (11–13), no sex given. Re-published 1818: 553, pl. 26 (11–13).

Type: Lectotype ♀ (Brit. Mus.), fixed by Austen (1903: 259), labeled as from Bengal (original description gave India orientali as type locality, no host data), with Leach's handwritten name label, re-examined by Bequaert (1939b: 83).

Status: Synonym of *Hippobosca variegata* Megerle 1803 (#103).

maculata (*Hippobosca*) Macquart 1835: 638, no sex given. As n. sp., name preoccupied, not Leach 1817.

Types: 3 ♂♂, 3 ♀♀ (coll. Collin *ex* coll. Bigot), placed under cabinet label "*Hippobosca maculata* Macq. C. B. Esp. [=Cape of Good Hope]. Coll. Serville" in handwriting by Bigot, no host record, with no name label by Macquart (one of the ♀♀ with a label "Caffraria" on pin), re-examined by Speiser (1902b: 162). The original record reads "Du cap de Bonne-Espèrance." Macquart (1835: 639) also described an unnamed variety of his *maculata* from Senegal. The specimen involved is 1 ♀ now in the general collection, Paris Mus., labeled "No. 634. X. *Hippobosca maculata* var." (in Macquart's handwriting) and "Seneg." It is referable to *H. variegata* Megerle.

Status: Synonym of *Hippobosca rufipes* Olf. 1816 (#102) and a homonym of *H. maculata* Lch. (=*variegata* Megerle). The Senegal variety is referable to *H. variegata* Megerle 1803 (#103).

maculata (*Pseudolfersia*) Coquillett 1899b: 336, no sex given.

Types: Holotype ♀ (#4211, labeled as *Ornithoponus maculatus*) and 1 ♂ and 6 ♀ paratypes (U. S. Nat. Mus.). Holotype from Wisconsin, USA, off a loon [*Gavia immer immer* Brünnich]; paratypes from unknown locality, off *Pandion haliaetus carolinensis* Gmel.; all re-examined by Bequaert (1933d: 104, 1952: 220, 1957: 456). Whereabouts of another 1 paratype unknown.

Status: Synonym of *Olfersia fumipennis* (J. Sahlb.) 1886 (#88). The "*maculata* Coq." of Murphy (1921, 1925) is referable to *O. fossulata* Mcq.

magna (*Ornithoctona*) Ferris 1926: 285, pl. 11 (2 e–h), ♀♂. First published as a nom. nud. in 1925b: 339.

Types: Original series 2♂♂, 8♀♀, Kalabit, Sarawak, off *Spilopelia tigrina* [*Streptopelia chinensis tigrina* Temm.]. The holotype ♀ and 1 ♂, 1 ♀ paratypes were stated to be in Sarawak Mus., not seen by me; allotype ♂, 1 ♂, 1 ♀ paratypes and 1 puparium (Stanford Univ.), on 7 slides.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

majuscula (*Lynchia*) Bequaert 1945b: 98, figs. 2–3 (wrongly labeled as ♂), ♀.

Type: ♀ (Harvard Univ.), unique, on slide, Ceylon, off *Spilornis cheela spilogaster*.

Status: Synonym of *Lynchia longipalpis* (Mcq.) 1835 (#72).

[*makilingensis*]. See under *maquilingensis*.

maquilingensis (*Ornithophila*) Ferris 1924a: 392, figs. 1–2, ♀. Emended as *makilingensis* by some later authors.

Type: ♀ (U. S. Nat. Mus.), unique, on 2 slides, Mt. Maquiling, Luzon, Philippine Is., no host data. The original label by Ferris on the slide of the body has been partly eaten up by museum pests and the first word was re-labeled by somebody in pencil as *Ornithomyia*. But Ferris' original handwriting "*Ornithophila*" is still legible.

Status: Distinct species of *Lynchia* sen. Beq. (#63a). Suggested by Bequaert (1953a: 318) to be possibly not separable from *L. simplex* (Wk.) 1861.

[*marginata* Lw.]. See under *chalcomelaena*.

[*marginata* (*Hippobosca*) (Macquart *in litt.*) van der Wulp 1894: lxvi]. Cited as a synonym of *H. rufipes* Olf.

Status: Synonym of *Hippobosca rufipes* Olf. 1816 (#102).

martinaglia (*Hippobosca*) Bedford 1936b: 67, fig. 1, ♀♂.

Types: Lost (see Bequaert 1941a: 22 and *teste* one of the collectors, Dr. R. M. du Toit, *in litt.*, dated VII. 1962). Original series 5 ♀♀ (incl. holotype), 1 ♂, from Bar R. Ranch, Swaziland, S. Africa, off *Aepyceros melampus* Lcht.

Status: Synonym of *Hippobosca fulva* Austen 1912 (#98).

massaica (*Hippobosca struthionis* var.) Speiser 1909c: 30, no sex given.

Types: Lectotype ♂ (Stockholm Mus.), here fixed, "Meru Nieder: Ngare na nyuki, auf *Struthio massaicus*" [*S. camelus massaicus* Neumann]. The original description did not give details of collection data of the type material, but merely mentioned that the new variety was for the E. African specimens off "Strauss" [*Struthio*], including those from Brit. E. Africa recorded by Austen (1903: 259) and those collected by the Kilimanjaru-Meru Expedition and previously recorded by Speiser himself as *struthionis*. There are now at the Stockholm Mus. another 3♂♂, 4♀♀ from Meru Nieder and Massaistoppen, in the Kilimanjaru area determined by Speiser as *struthionis* "Orm." (sic) and collected by Y. Sjöstedt (1905). All of them may be considered syntypes of *massaica*.

Status: Synonym of *Hippobosca struthionis* Jans. 1889 (#96).

[*massonati*]. See under *massonnati*.

massonnati (*Ornithoponus*) Falcoz 1926: 31, figs. 28–29, ♀, as n. name for *Olfersia americana*, Massonnat 1909: 304, pl. 5 (40–42), ♀ (misinterpretation, not of Leach 1817). Misspelled as *massonati* by some later authors.

Type: Presumably lost; not now in Paris Mus. Originally based upon 1 unique ♀ from Ain, Region des Dombes, France off *Platalea leucorodia* Linn. The type is perhaps a ♂ instead, since in Massonnat's paper, no abdominal bristle-bunches were mentioned or figured.

Status: Distinct species of *Lynchia* sen. Beq. (#60). Listed by Séguy (1936: 112) as a synonym of *L. palustris* Lutz [apparently an error for *L. schoutedeni*]. The "*massonnati* Falc." (as *massonati*) of O'Mahony (1940: 75) is referable to *L. albipennis* (Say).

maura (*Olfersia*) Bigot 1885: 237, no sex given. Misspelled as *mauza* by Schuurmans Stekhoven (1931: 501).

Types: 2♀♀ (coll. Collin *ex* coll. Bigot), Algeria, no host record, re-examined by Speiser (1902b: 162) and Collin (*in* Bequaert 1955: 409), not seen by me.

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78). Once recognized as a distinct species of *Lynchia*, *Pseudolfersia* and *Pseudolynchia*. The "*maura* Bigot" of Knab (1916: 3, in part) is referable to *Pseudolynchia brunnea* (Latr.); that of Beatty (1947: 154), to *Microlynchia pusilla* (Speis.).

[*mauza*]. See under *maura*.

mazamae (*Lipoptena*) Rondani 1878: 153, ♀. Misspelled as *mazani* by Vogelsang (1953: 530).

Type: ♀ (Firenze Mus. #3385), here fixed as lectotype, representing the only Neotropic specimen of *Lipoptena* now in the Firenze and Genova museums, glued on card, no locality and host (original record, C. and S. America, off *Cervus mexicanus* [*Odocoileus virginianus mexicanus* Gmel.]), placed under cabinet label in handwriting by Rondani "*Lipoptena mexicana* n." The name *mexicana* has never been published and is not to be confused with *L. depressa* var. *mexicana* Towns., although the latter is a synonym of *mazamae* too. Bequaert (1957: 499) suggested the type, collected by Bellardi, most probably to have come from Mexico.

Status: Distinct species of *Lipoptena* (#121).

[*mazani*]. See under *mazamae.*

meda (*Lynchia*) Maa 1963. See Appendix for full description (#74).

melaena (*Ornithoctona*) Speiser 1904a: 347, no sex given.

Type: Lost; not now at Berlin Mus. Originally recorded from Si Rambe, Sumatra, no host data.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

melaleuca (*Ornithoica*) Bau 1922: 276, 278, ♀.

Type: ♀ (Berlin Mus.), unique, in alcohol, Estacion Meyer, Sa. Clara Prov., Cuba, off a "grosse weisse Nachteule", surmised by Bau to have been *Strix flammea furcata* [*Tyto alba furcata* Temm.].

Status: Synonym of *Ornithoica vicina* (Wk.) 1849 (#9). Once listed as a variety of *O. confluenta* (Say).

melbae (*Chelidomyia*) Rondani 1879: 17, ♂.

Types: Lectotype ♂ (Genova Mus.), fixed by Guiglia (1957: 194), labeled "Capraja. 12. VIII. 75. Violante" and "Presa sul *Cypselus melba*", with no Rondani's name label; 2 ♀♀ (Firenze Mus. #3396), paratypes, the first specimen with same labels as on lectotype, both placed under cabinet label in handwriting by Rondani "*melbae* Rnd." The original record reads "Mares aliquos tantum observavi in *Cypselo melba* repertos, a Doct. Gestro as Insulam caprariam, et a Prof. Bellardi in Pedemontio." Whereabouts of the Piedmont specimens unknown, perhaps in coll. Bellardi. Capra is a small islet W of Italy.

Status: Distinct species of *Crataerina* (#25).

meleagridis (*Pseudolfersia*) Lutz IN Lutz, Neiva & Costa Lima 1915: 179, pl. 27 (3), no sex given. As "n. sp. (?)".

Types: Many specimens (largely in Inst. Osw. Cruz, 1♂ syntype in U. S. Nat. Mus.), from interior of State Pernambuco, from State Maranhão (São Luiz do Maranhão) and from State Minas Gerais or Espirito Santo, all in Brazil, off *Meleagris gallopavo gallopavo* Linn. (domestic), *Tinamus solitarius* Vieillot and man. The syntype at U. S. Nat. Mus. has been re-examined by Bequaert (1957: 482); those at Inst. Osw. Cruz not seen by me.

Status: Synonym of *Olfersia coriacea* Wulp 1903 (#85).

[*metallica* (*Hippobosca*) Schummel 1833 Uebers. Arb. Veränd. Schlesisch. Ges. Vaterl. Cultur 1832: 71]. Silesia, off *Ardea stellaris* [*Botaurus stellaris*]. nom. nud.

Status: Synonym of *Lynchia albipennis* (Say) 1823 (#48). Suggested by some authors to be synonymous with *Ornithophila metallica* (Schin.)

metallica (*Ornithomyia*) Schiner 1864: 646, no sex given.

Type: ♀ (Wien Mus.), here fixed as holotype, representing the only specimen of this species collected prior to 1864, no locality, no host record, labeled "*submetallica* Schin." in Schiner's handwriting. The name *submetallica* has never been published. The author failed

to mention the type locality ("Ich fing diese seltene Art, ··· ein einziges Mal···") which is presumably somewhere near Wien, Austria.

Status: Distinct species of *Ornithophila* (#12). Generally assigned to *Ornitheza.*

mexicana (*Olfersia*) Macquart 1843: 435 (=p. 278 of reprint), no sex given.

Types: Lectotype ♀ (Paris Mus. *ex* coll. Macquart), fixed by Bequaert (1955: 326), no host record, with printed labels "Muséum Paris. Mexique. Vera Cruz. Me. Salle 1834" and "Type", with Macquart's handwritten labels "469" and "*Olfersia mexicana*" and a round label "75/8817", determined by Bequaert as *Lynchia nigra* (Perty); 1♀ (coll. Collin *ex* coll. Bigot), paratype, labeled by Bigot as from Mexico, with Macquart's determination label on pin, determined by Bequaert (*l. c.*) as *Olfersia bisulcata* Mcq. and re-examined by Speiser (1902b: 179). The original record reads "Du Mexique. Muséum." There is a second ♀ in Paris Mus. placed next to the lectotype, labeled "Muséum Paris. Mexique. Salle 97–56", "Cotype" (both printed), "97/56" and "*Olfersia mexicana* Macq." (not in Macquart's handwriting), correctly determined by Bequaert as *Ornithoctona erythrocephala* (Lch.). Its status as a paratype of *mexicana* Mcq. is to be debated as the number "97/56" indicates the specimen to have come to or to have been registered at the Museum in 1856, that is 13 years after the publication of this name. It is very likely that it was later added or mixed-up by the collector Mlle. Salle or by some Museum people.

Status: Synonym of *Lynchia nigra* (Perty) 1833 (#54). Once listed as a distinct species of *Pseudolfersia.* The paratypes at the coll. Bigot and Paris Museum are referable to *Olfersia bisulcata* Mcq. 1847 (#86) and *Ornithoctona erythrocephala* (Lch.) 1817 (#41) respectively. The "*mexicana* Mcq." of Speiser (1902, 1907, 1908), being interpreted from the paratype at the coll. Bigot, is referable to *bisulcata* too.

mexicana (*Lipoptena depressa* var.) Townsend 1897: 289, ♀♂.

Types: 4 syntypes (Brit. Mus. #1903. 33, *ex* coll. Townsend, purchased from E. Brunetti), each labeled "San Rafael. VC. (Vera Cruz) 3. 27" (printed), one (♀), here considered lectotype, with additional labels "Cotype" (printed) and "*Lipoptena depressa* v. *mexicana* Towns. Cotype" by an unknown hand (not of the author or Brunetti); whereabouts of 149 other syntypes unknown. The original record is nr. Paso do Telaya, Vera Cruz, Mexico, off *Cariacus virginianus* var. *mexicanus* [*Odocoileus virginianus mexicanus* Gmel.].

Status: Synonym of *Lipoptena mazamae* Rndn. 1878 (#121). Listed by some authors as a synonym of *L. depressa* (Say).

[*mexicana* (*Lipoptena*) Rndn.] See under *mazamae.*

minor (*Olfersia*) Bigot 1858: 376, no sex given.

Type: ♂ (Paris Mus.), unique, slightly damaged, labeled, "2431/83", "Type" and "*Olfersia minor* n. sp. J. Bigot. Gabon. Coll. Thomson", the last in handwriting by Bigot, no host record.

Status: Distinct species of *Lynchia* sen. Beq. (#53).

minuta (*Ortholfersia*) Paramonov 1954: 290, ♂♀.

Types: Holotype ♂ (Commonw. Sci. Ind. Res. Organiz., Canberra), Eidsvold, Queensland, Australia, no host record; 2♂, 2♀ paratypes (Commonw. Sci. Ind. Res. Organiz.),

Brisbane and Tambourine Village, both in Queensland, no host records. Not seen by me.

Status: Distinct species of *Ortholfersia* (#94).

modesta (*Lynchia*) Maa 1963. See Appendix for full description (#72b).

momiyamai (*Ornithoica*) Kishida 1932: 245, fig. 474, ♀.

Types: From Japan, off "hachijo-kotsuko" [*Turdus naumanni naumanni* Temm.] and "monzu" [*Lanius bucephalus bucephalus* Temm. & Schl.], in coll. Kishida, not seen by me.

Status: Synonym of *Ornithoica stipituri* (Schin.) 1868 (#6). Once synonymized by me (1962: 587) with *O. exilis* Wk.

montanus (*Melophagus ovinus* ssp.) Ferris & Cole 1922: 192, figs. 9E, 10, ♂.

Types: Holo- and 3 paratypes, ♂♂ (Stanford Univ.), on slides, Alaska-Yukon boundary, off "mountain sheep" surmised by the authors to have been either *Ovis dalli* Allen or *O. canadensis* Shaw.

Status: Synonym of *Melophagus ovinus* (Linn.) 1758 (#123).

moschi (*Hippobosca*) Pallas 1777: 50 footnote, pl. 3 (12B, 12b), no sex given.

Types: 2♀♀ (Wien Mus. *ex* coll. Winthem), "Russland. Coll. Winthem", one of them with an additional label "*Moschi* Pallas. Russia merid." is here selected as lectotype. The original record is E. Siberia, off *Moschus sibiricus* [*M. moschiferus sibiricus* Pallas]. As *moschiferus* ranges almost all over Siberia and extends to Kashmir, Tibet, Mongolia, Manchuria, Korea and northern China Proper but does not occur in Russia Proper, and as the subsp. *sibiricus* is known from Stanovoi Range, Transbaikalia only, the type locality on the labels are apparently wrong and should be corrected and restricted to Transbaikalia.

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109). Listed by some authors as a distinct species of *Melophagus.*

moschi (*Melophaga*) Wiedemann 1830: 613, no sex given. As n. sp.

Types: Same as that of *Hippobosca moschi* Pallas (*q. v.*), since Wiedemann stated that he received from Pallas the material which eventually went to Winthem.

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109).

mycetifera (*Pseudolfersia*) Speiser 1905a: 359, ♂.

Type: ♂ (Wien Mus.), unique, in alcohol, Senafir I. (27° 56′ N., 34° 43′ E.) in Red Sea, off "Alder" [probably *Pandion haliaetus* Linn.], re-examined by Bequaert (1957: 456), not seen by me.

Status: Synonym of *Olfersia fumipennis* (J. Sahlb.) 1886 (#88).

nakamurai (*Brachypteromyia*) Kishida 1932: 248, fig. 481, ♀. Misspelled as *namakurai* by Bequaert (1953: 268, 275).

Types: Said to have been from Japan, off "tsubame" [*Hirundo rustica gutturalis* Scop.] all-through the year. This is certainly wrong and the types probably were from the Philippines, off *Collocalia.* Types in coll. Kishida, not seen by me.

Status: Synonym of *Myophthiria capsoides* Rndn. 1878 (#29). Once listed as a syno-

nym of *M. reduvioides* Rndn.

[*namakurai*]. See under *nakamurai.*

neavei (*Hippobosca hirsuta* var.) Austen 1911: 171, fig. 1b, ♀♂.

Types: ♂-type, ♀-type (Brit. Mus.), from junction of Mpamadzi and Luangwa Rivers, NE Rhodesia, S. Africa, off *Kobus defassa* Rüpp.; 1♂ and 1♀ paratypes (Brit. Mus.), 1♂ paratype (Harvard Univ.), Mid Luangwa River, off same host; all re-examined by Bequaert (1939b: 86); whereabouts of other 5 paratypes unknown. The "♀-type" is to be considered lectotype.

Status: Synonym of *Hippobosca hirsuta* Austen 1911 (#101).

nebulosa (*Ornithomyia*) Say 1823: 102, no sex given.

Type: Lost; not now traceable at Philadelphia Acad. Sci. and coll. Wiedemann. Originally recorded from the "USA.", off *Strix nebulosa nebulosa* J. R. Forster. The exact type locality, as suggested by Swenk (1916: 127), is probably nr. Blair, Nebraska.

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (#41), by conventional interpretation. Once listed by some authors as a distinct species of that genus.

neotropica (*Brachypteromyia*) Bequaert 1943a: 113, fig. 1, ♂. First published as a nom. nud. in 1942c: 83 (publ'd 31. XII. 1942).

Type: ♂ (Harvard Univ.), unique, partly damaged by museum pests, Galipán nr. Pico del Avila, Estado Miranda, Venezuela, off *Aeronautes montivagus montivagus* d'Orb. & Lafr.

Status: A distinct species of *Myophthiria* (#33).

[*nepodostyla*]. See under *podopostyla.*

[*nigra* (*Hippobosca*) Osbeck 1757 Dagbok··· Ostindisk Resa: 297.] Ascension I., off *Pelecanus aquilus* [*Fregata aquila* Linn.]. nom. prae-Linn. nom. nud. Renamed as *Ornithomyia pelecani-liscatoris* by von Olfers (1816: 103).

Status: Synonym of *Olfersia spinifera* (Lch.) 1817 (#90).

nigra (*Hippobosca*) Perty 1833: 190, pl. 37 (15), no sex given.

Type: ♀ (Munich State Zool. Mus.), unique, left hind leg damaged, with no collection data on pin [original record, State Piauhy, Brazil, no host data], labeled by Bequaert 1933 as holotype, re-examined by Speiser (1905a: 356) and Bequaert (1955: 325).

Status: Distinct species of *Lynchia* sen. Beq. (#54). Once assigned to *Olfersia, Ornithomya* and *Pseudolfersia.* Listed by Falcoz (1929: 45) as a synonym of *Olfersia spinifera* (Lch.). The "*nigra* Perty" of Lutz (1915: 181) is referable to *Lynchia americana* (Lch.); that of Walker (1849: 1143) and Austen (1903), to *Olfersia spinifera* (Lch.).

nigricans (*Ornithomyia*) (Latreille *in litt.*) Leach 1817a: 12, pl. 27 (7–10), no sex given. Re-published in 1818: 558, pl. 27 (7–10). Misspelled as *nigricornis* by Speiser (1902a: 329).

Type: ♀ (Brit. Mus.), unique, Bengal, no host record, with name label in Leach's handwriting, re-examined by Austen (IN Ferris 1927b: 20, footnote) and Bequaert (1952: 219).

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42). Once listed as a distinct species of that genus. The "*nigricans* Lch." of Johnson (1898: 164) is referable to *Lynchia nigra* (Perty).

nigricornis (*Ornithomyia*) Erichson 1842: 274, no sex given.

Type: ♀ (Berlin Mus. #5051), unique, pregnant, labeled "Vandiem. [Van Dieman's Land, *i. e.*, Tasmania]. Schayer", "*nigricornis* Er*., *Tasmanensis* Meig." and "*O. nigricornis* Erichs. Typen.=*Ornithomyia avicularia* L.", the last label in handwriting by Speiser (1904b: 87), no host record. The meaning of the asterisk (*) on name-label is unknown.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (#13).

[*nigricornis* Lch.]. See under *nigricans.*

[*nigriroster*]. See under *nigrirostris.*

nigrirostris (*Ornithomyia*) von Roser 1840: 64, no sex given. Misspelled as *nigriroster* by Falcoz (1929: 50).

Type: 1 ex. (Stuttgart Mus.), sex undetermined, from Germany, no host record, re-examined by Speiser (1905a: 352), not seen by me.

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109). Once wrongly interpreted by Bezzi (1905) and others as a synonym of *Ornithomya avicularia* (Linn.).

nigrita (*Olfersia*) Speiser 1905a: 358, no sex given.

Type: ♂ (Wien Mus.), Manila, Luzon, Philippine Is., labeled "Hügel" (printed) and "*Olfersia nigrita* Speiser.—Type—" (in author's handwriting), no host record.

Status: Distinct species of *Lynchia* sen. Beq. (#73).

nigriventris (*Stenepteryx hirundinis* var.) Strobl 1906: 415, no sex given.

Types: Whereabouts unknown, 2 ex., sex undetermined, Puebla de Don Fadrique, Spain, no host record.

Status: Synonym of *Crataerina pallida* (Latr.) 1812 (#27). Once listed as a distinct species of that genus.

nipponensis (*Ornithoica*) Kishida 1932: 246, fig. 476, ♂.

Type: From Japan, off "hashibuto-garasu" [*Corvus japonensis* Bonap.], in coll. Kishida, not seen by me.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (#13).

nipponica (*Lynchia*) Kishida 1932: 248, fig. 480, ♀.

Type: From Japan, off "iwa-tsubame" [*Delichon urbica dasypus* Bonap.], in coll. Kishida, not seen by me.

Status: Synonym of *Crataerina hirundinis* (Linn.) 1758 (#23). Once listed as a distinct species of *Stenepteryx.*

nitens (*Ornithomyia*) Bigot 1885: 241, no sex given.

Types: 5♀♀ (coll. Collin *ex* coll. Bigot), Panama, no host record, re-examined by

Speiser (1902b: 166) and Bequaert (1954: 231). The smallest of these ♀♀ was wrongly assumed by some authors to be a ♂ and was determined by Speiser as *Ornithoctona haitiensis* (Bigot), a synonym of *O. erythrocephala* (Lch.). Bigot (*l. c.*) clearly mentioned his *nitens* and *haitiensis* to have been based upon 5 and 1 specimens respectively and failed to notice the very characteristic shape of the antennae in these 2 species ("antennis nigris nigroque villosis" for *nitens* and "antennis fulvis, nitidis, nigro setosis" for *haitiensis*). It is therefore quite improbable that this small ♀ has been misplaced and is originally a syntype of *haitiensis*. One of the larger ♀♀ is here selected as lectotype.

Status: Distinct species of *Ornithoctona* (#39). Once assigned to *Ornithopertha*. The smallest syntype mentioned above is *O. erythrocephala* (Lch.) 1817 (#41).

[*nivalis* (*Leptopteryx*) Zetterstedt 1838 Isis (Oken): 39. Re-published in 1838 Ins. Lapp.: 625.].

Status: Doubtfully referred to Hippoboscidae by the author, actually an *Aphis* sp. (Aphididae, Hemiptera), see Bergtsson (1902 Wien. Ent. Ztg. **21**: 150).

noumeana (*Olfersia*) Bigot 1885: 240, no sex given.

Type: ♂ (coll. Collin *ex* coll. Bigot), unique, New Caledonia, off *Alcedo*.

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (#12).

obliquinervis (*Olfersia*) Rondani 1878: 162, no sex given.

Types: Original series 2 ex., sex unknown, Mexico, no host record, not now traceable at Genova and Firenze museums, possibly in coll. Bellardi somewhere in Italy.

Status: Synonym of *Lynchia nigra* (Perty) 1833 (#54).

[*obscura* (*Lipoptena cervi* var.) (Rörig *in litt.*) Lühe 1906 Schrift Phys. Oek. Königsberg **46**: 180]. Cited as a synonym of *Lipoptena cervi* var. *alcis* Schnabl.

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109).

obscurata (*Ornithomyia*) Walker 1861: 270, no sex given.

Types: Lectotype ♀ (Brit. Mus. #68. 4, *ex* coll. Saunders), here fixed, labeled "Tond. 1" and "*obscurata*" (the latter label in Walker's handwriting), no host data, re-examined by Austen (1903: 262) and Bequaert (1954: 222); 1♀ (Oxford Univ.), paratype, "Tond. 11", with Walker's handwritten label "*Ornithomyia obscurata*" and Saunders' auction-sale label "*Ornithomyia obscurata* Walk. Tondano. Wallace. E. [ex] Mus. Saund. 1867. 10*d* [10 pennies, price of this specimen at auction]." The 2 specimens are not conspecific or congeneric, the one at the Brit. Mus. is paler and its legs still have some greenish tints. Thus it agrees better with the original description than does the one at Oxford Univ.

Status: Synonym of *Ornithoctona australasiae* (Fabr.) 1805 (#34). Once listed by Speiser (1902a: 329) as a distinct species of that genus. The paratype is referable to *Lynchia chalcolampra* (Speis.) 1904 (#65).

obtusipennis (*Crataerina*) Austen 1926: 356, ♀.

Types: Holotype ♀ and 1♀-paratype (Brit. Mus. #75.38, purchased from Whitely), Mongolia, right wing of the paratype missing; 3♀♀ (Brit. Mus. #63. 47, *ex* coll. J. C.

Bowring), paratypes, Penang, Malaya. Both lots are without host records but were surmised by the author to have been off *Micropus* [*Apus*] *pacificus* Latham on the ground that this bird is found in both Mongolia and Penang. The locality Mongolia might be incorrect and it seems advisable to restrict Penang as the only type locality of *obtusipennis*. In the Brit. Mus., there is 1♀ *Ornithoctona plicata* (Olf.) also labeled as from Mongolia ♯75.38, purchased from Whitely. Basically *plicata* is a Palaeotropic species and its occurrence in Mongolia is quite improbable.

Status: Distinct species of *Crataerina* (♯26).

oculata (*Hippobosca*) Motschulsky 1860: 504, no sex given.

Type: From Schilka to Nikolaevsk, Amur Valley, E. Siberia, no host record, collected by Schrenk, probably either in Moscow or Leningrad Mus., not seen by me.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (♯13).

odontoscelis (*Ornitheza*) Speiser 1904d: 392, ♂.

Type: Destroyed. ♂, unique, from Ledenice nr. Novi, Hungarian Küstenland (now Jugoslavia), off *Saxicola aurita* Temm., formerly in Budapest Mus.

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (♯12).

[*oegyptiaca*]. See under *aegyptiaca*.

opposita (*Ornithomyia*) Walker 1849: 1145, no sex given.

Type: ♀ (Brit. Mus. ♯45. 30, *ex* coll. Earl), unique, New Zealand, no host record. The original record reads "New Zealand. From Mr. Earl's collection." The second New Zealand ♀-specimen (♯50. 71) placed at side of the type and collected by Capt. Parry is evidently not a syntype. It was not mentioned in the original description and came to the Museum one year after the publication of *opposita*. Meanwhile it is not conspecific with the type but referable to *O. fringillina* Curt.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (♯13).

orientalis (*Hippobosca*) Macquart 1843: 432 (=p. 275 of reprint), pl. 36 (6), no sex given.

Types: 1♂ (Paris Mus. *ex* coll. Macquart), labeled "Muséum Paris. Judée. Roux. 1. 36", "54", "36/1" and "No. 141. *hippobosca orientalis*" (the last label in handwriting by Macquart), no host data, here selected as lectotype although the original record reads "Des Indes orientales. Muséum"; 2♀♀ (Paris Mus., general coll.), paratypes, with same labels (except lacking Macquart's determination label) and same field and accession numbers; 3♂♂ (Paris Mus. *ex* coll. Macquart), placed along with lectotype, labeled "Muséum Paris. Arabie. Diedda. Botta 288–39" and one of them with Macquart's handwritten label "*hippobosca orientalis* Macq.". These ♂♂ are actually *H. camelina* Lch. and are evidently not syntypes of *orientalis* but later additions (Arabia was not included in original record). The locality name, Judée, on the lectotype might be simply a mistake for "Indes", due to either wrong deciphering of the original label by some Museum people, or mixing-up by the seller Roux. A large collection of insects from India and also a number of specimens labeled as if from Judée were sold by Roux in 1836 to the Museum. At least one of his "Judée" insects, *Cyc'opodia sykesii* (Wwd.), has been definitely proven to be exclusively Indian (see 1954 Theodor & Moscona, Parasitology **44**: 222). On the other hand, there

seems to be no undisputable proof that the Roux collection does contain any true Judée (Palestine) insects. Consequently I feel reasonably safe to accept India as the correct locality of the lectotype.

Status: Synonym of *Hippobosca longipennis* Fabr. 1805 (#99).

orizabae (*Ornithoctona* subgen. *Ornithoctona*) Bequaert 1954: 208, figs. 39A, 43 G-H, 44B, ♂.

Type: ♂ (Harvard Univ.) (not as stated in original description, in Brit. Mus.), unique, Orizaba, State Vera Cruz, Mexico, no host record.

Status: Distinct species of *Ornithoctona* (#40).

[*ovilla*]. See under *ovina.*

ovina (*Hippobosca*) Linnaeus 1758: 607, no sex given, no description, but merely citing earlier works by Frisch, etc. Misspelled as *ovilla* and *ovis* by some later authors.

Type: Lost. The original record gave no definite locality, presumably Sweden, habitat "inter ovium lanam."

Status: By conventional interpretation, a distinct species of *Melophagus* (#123). The "*ovinus* Linn." of Randolph & Eads (1947: 600) is referable to *Lipoptena mazamae* Rndn.

[*ovis*]. See under *ovina.*

oxycera (*Ornithoctona*) Falcoz 1929: 36, figs. 1–3, ♀.

Types: Holotype ♀ (Paris Mus.), in alcohol, Bogotá, Colombia, off *Geranoaetus melanoleucus*[*Buteo melanoleucus melanoleucus* Vieillot], re-examined by Séguy (IN Bequaert 1954: 266), not seen by me, perhaps lost; ♀ paratype (pinned) lost; neallotype ♂ (Harvard Univ.), described by Bequaert (1954: 226) from Fusugasugá, Dept. Cundinamarca, Colombia, no host record.

Status: Distinct species of *Ornithoctona* (#37).

[*palidilabris*]. See under *pallidilabris.*

[*palilda* Say]. See under *pallida* Say.

pallida (*Ornithomyia*) Latreille 1812: 544, no sex given. Authorship often wrongly accredited to A. G. Olivier.

Type: Lost. Originally recorded from Europe, no host mentioned but presumably off *Hirundo*, since *Hippobosca hirundinis* sensu Panzer (1793: pl. 24) was cited as a synonym.

Status: A distinct species of *Crataerina* (#27). Once assigned to *Anapera*, *Chelidomyia*, *Hippobosca*, *Oxypterum* and *Stenepteryx.*

pallida (*Ornithomyia*) von Olfers 1816: 102, no sex given. Name preoccupied, not Latreille 1812.

Type: Lost; not now traceable in Berlin Mus. The original record reads "in Germania (Coll. Com. de Hoffm.)", no host data.

Status: Junior homonym of *Ornithomya pallida* Latr. 1812 and synonym of *O. biloba* Duf. 1827 (#20).

pallida (*Ornithomyia*) Say 1823: 103, no sex given. Name preoccupied (n. name: *O. anchineuria* Speis. 1905), not Latreille 1812, not von Olfers 1816. Misspelled as *palilda* by Coquillett (1907: 290).

Type: Lost. Originally recorded from the "USA.", off *Sylvia sialis* [*Siala sialis sialis* Linn.]. The exact type locality, as suggested by Swenk (1916: 127), is probably nr. Blair, Nebraska.

Status: Synonym of *Ornithomya fringillina* Curt. 1836 (#15). Listed by Falcoz (1926: 25) as synonymous with *O. avicularia* (Linn.).

pallida (*Ornithobia*) Meigen 1830: 230, pl. 63 (21–24), no sex given. First published as a nom. nud. by Curtis (1829 Guide Arrangem. Brit. Ins., column 242).

Type: ♂ (Paris Mus. #2700), alate, unique, label "Meigen 2900/40", from Europe, surmised by Meigen to have been from birds, but no such data on pin.

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109). Once listed as a distinct species of *Alcephagus*.

pallidilabris (*Olfersia*) Rondani 1878: 161, no sex given. Misspelled as *palidilabris* by some later author.

Types: Not now at Firenze and Genova museums; possibly in coll. Bellardi somewhere in Italy. Originally described from 2 ex. of undetermined sex from Mexico, no host record.

Status: Synonym of *Lynchia nigra* (Perty) 1833 (#54), by Bequaert's (1955: 315) interpretation. Once listed as a distinct species of that genus.

pallipes (*Haemobora*) Curtis 1824: pl. 14, ♂. Second printing in 1834, also as pl. 14, but with altered letter-press.

Type: Lost. Originally described from alate specimens from New Forest, England, off man.

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109).

pallipes (*Ornitheza*) Speiser 1904c: 177, no sex given.

Types: 1♂ (Milano Mus. *ex* coll. Bezzi), here selected as lectotype, labeled "*Strix flammea*" [*Asio flammeus flammeus* Pontopp.], "Palermo [in Sicily]. Dr. Stefani" and "*Ornitheza pallipes* Speiser" (the last label in the author's handwriting), placed under cabinet label by Bezzi "*Ornitheza pallipes* Speiser, typ." Paratypes at Berlin Mus. ex coll. H. Loew: 1♀, "Graecia. Strix noctua. Krüper"; 1♀, Parnass, off *S. noctua*, VII. 1866; 1♀ (#11306), same data but off *S. scops*, labelled by somebody as *Olfersia metallica* Schin.; 1 ♀, Parnass, off "*Corvus gran.*" Originally described from 6 ex. (4 at Berlin Mus. and 1 each at Wien Mus. and coll. Bezzi) from Greece, off *Strix* (*Athene*) *noctua* Boie and *S. scops* [*Otus scops* Linn.] and from Palermo, off "*S. flammea.*"
The single syntype at Wien Mus. not seen by me.

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (#12).

palustris (*Olfersia*) Lutz IN Lutz, Neiva & Costa Lima 1915: 183, pl. 28 (4), no sex given.

Types: Many syntypes in Inst. Osw. Cruz at Rio de Janeiro, not seen by me; 1♀

syntype (Harvard Univ.), Lassance, Estado Minas Gerais, Brazil, off *Ardea socoi* [*A. cocoi* Linn.]; other syntypes from Piauhy, Brazil, off *Herodias egretta* [*Casmerodius albus egretta* Gmel.], *Tigrisoma brasiliense* [*T. lineatum marmoratum* Vieillot], *Cancroma cochlearia* [*Cochlearius cochlearius cochlearius* Linn.] and *Harpiprion cayennensis* [*Mesembrinibis cayennensis* Gmel.] and from Rio de São Francisco, Brazil, off *C. albus egretta.* Syntypes partly re-examined by Bequaert (1955: 347).

Status: Synonym of *Lynchia albipennis* (Say) 1823 (#48). Once listed as a distinct species of that genus. The "*palustris* Lutz *et al.*" of Bequaert (1933: 71) is referable to *L. schoutedeni* Beq.

papuana (*Olfersia*) Rondani 1878: 162, no sex given.

Types: Holotype ♀ (Genova Mus.), listed by Guiglia (1957: 195), labeled "N. Guinea. Hatam. VI. 1815. Beccari" and with Rondani's handwritten name label, no host record, re-examined by Speiser (1902a: 337). Hatam is a small village SW of Manokwari, W. New Guinea.

Status: Synonym of *Lynchia plana* (Wk.) 1861 (#66).

paradoxa (*Lipoptena*) Newstead 1907: 91, figs. 19–20, ♀.

Types: 1 ♀ (Brit. Mus. *ex* coll. Newstead), labeled as off antelope (original description giving *Tragelaphus scriptus* Pallas as host), Kasongo, Congo; 1 ♀ (Brit. Mus.), on slide, same data; both ♀♀ with printed "cotype" labels. Whereabouts of other syntypes unknown.

Status: Distinct species of *Lipoptena* (#106). Once assigned to *Echestypus.*

parallelifrons (*Olfersia*) Speiser 1902a: 336, no sex given.

Type: Destroyed; 1 ex. of undetermined sex, Frederich-Wilhelmshafen [=Madang], Astrolabe Bay, NE New Guinea, no host record, formerly at Budapest Mus.

Status: Unrecognizable species of *Lynchia* sen. Beq. (#75). Probably close to, if not synonymous with *L. plana* (Wk.) 1861.

paricella (*Ornithomyia*) Speiser 1905a: 349. As n. name for *O. chilensis* E. C. Reed 1904, preoccupied, not Macquart 1843.

Types: See under *O. chilensis* E. C. Reed.

Status: Synonym of *Ornithomya parva* Mcq. 1843 (#17).

parva (*Ornithomyia*) Macquart 1843: 436 (=p. 279 of reprint), no sex given.

Types: 1 ♀ (coll. Collin *ex* coll. Bigot), on heavy pin, placed under cabinet label in Bigot's handwriting "*O. parva* Macq. D. Su. nomint. Nov. Granada" under genus *Olfersia,* with Macquart's label "*Ornithomyia parva* Macq.", determined by Speiser (1902b: 180) as *Stilbometopa parva* (Mcq.), no host record; 5 ♀♀ (coll. Collin *ex* coll. Bigot), on fine and very fine pins, placed under cabinet label in Bigot's handwriting "*O. parva* Macq. Chili" under genus *Ornitomyia* (sic), indicated on the round colored labels as 3 ♂♂ and 2 ♀♀, with no Macquart's name label, determined by Speiser (*l. c.*) as *Ornithomyia* sp. All these Chilean ♀♀ are evidently conspecific to one another and were, on direct comparison, found to be identical with the holotype of *Ornithomya remota* Wk. However, the antennae in the ♀ from Nova Granada are abnormal (almost straight in profile, weakly

carinate along outer sides in front view and with fairly sharp apices) and this probably misled Speiser to assign the very specimen to *Stilbometopa.* As Nova Granada was not included in the original record "Du Brésil ou du Chili. Muséum. M. Gaudichaud. Sur le oiseaux", this ♀ is not to be considered a syntype but is apparently a later addition. Its placing under the genus *Olfersia* with a separate cabinet label strengthens such an assumption. In the Paris Mus. now there are no specimens (even no pin-holes) under the cabinet label "#2017. *O. parva* M. Brésil" in box #66 of the coll. Macquart. Instead, 2 specimens are in the general collection of the Museum labeled "Afrique centrale. Delalande" and "*parva. Ornithomyia*" and another one (♀) labeled "Chili. M. Gaudichaud" and "*Ornithomyia platycera*" (both name labels in Macquart's handwriting). The former 2 are actually of the species now generally known as *Ornithoctona laticornis* (Mcq.) and are most likely the presumably lost types of *platycera* Mcq., whereas the latter is *parva.* The situation is so confusing that I would guess the 2 name labels might have been wrongly interchanged and that it seems advisable to select the single Chilean ♀ at Paris Mus. as lectotype of *parva* and to fix Chili as its type locality. This very ♀ fits the original description and original record and the selection of it as lectotype would only stabilize the generally accepted interpretation of the species. (*cf.* discussion under *platycera* Mcq.). All afore-mentioned Chilean specimens have been re-examined by Bequaert (1954: 153, 220).

Status: Distinct species of *Ornithomya* (#17). Once assigned to *Ornithoctona.* The "*parva* Mcq." of Speiser (*l. c.*) and Bequaert (1940c: 417) is referable to *Ornithoctona fusciventris* (Wdm.).

parvipalpis (*Echestypus*) Speiser 1907a: 3, 5, ♀♂.

Types: 1 ♂, 3 ♀♀ (Stockholm Mus.), Kilimanjaro Niederung, in alcohol, labeled in pencil by Speiser, as types of *parvipalpus* (sic), one of the ♀♀ here selected as lectotype; 1 ♀ (Berlin Mus.), paratype, in alcohol, with Speiser's name label in pencil; 1 ♂ (Stockholm Mus.), paratype, pinned. The original record is Mt. Kilimanjaro, Tanganyika, off *Tragelaphus scriptus roualeyni* Thomas.

Status: Synonym of *Lipoptena paradoxa* Newst. 1907 (#106).

[*panciseta*]. See under *pauciseta.*

pauciseta (*Lipoptena*) Edwards 1919: 55, pl. 6 (27–28), ♀♂. As *panciseta* at beginning of original description.

Types: Holotype ♂, paratype ♀, (Brit. Mus. #1915, 182), on slides, Sungei Kumbang, Korinchi, Sumatra, off *Muntiacus muntjak montanus* R. & K.; 4 ♂, 9 ♀ paratypes (Brit. Mus.), in alcohol, same data; all re-examined by Bequaert (1942a: 112).

Status: Distinct species of *Lipoptena* (#116).

[*pelecani-Piscatoris* (*Ornithomyia*) von Olfers 1816: 103. As n. name for *Hippobosca nigra* Osbeck 1757]. nom. nud.

Status: Synonym of *Olfersia spinifera* (Lch.) 1817 (#90).

penelopes (*Lynchia*) Weyenbergh 1881: 199, ♀♂.

Type: Lost, not now traceable. The original record is Tucuman, Argentina, off "pavo del monte, yacú o charata", *Penelope canicollis* [*Ortalis canicollis canicollis* Wagler].

Status: Generally accepted as a distinct but dubious species of *Lynchia* sen. Beq. but not impossibly a senior synonym of *Stilbometopa ramphastonis* Ferr. 1930 (#47).

perfuga (*Ornithomyia*) Speiser 1902a: 331, no sex given.

Types: Destroyed, 5 ex. of undetermined sex, New South Wales, Australia, no host record, formerly at Budapest Mus. The only specimens that I have seen, determined by Speiser as *perfuga*, are 3 ♀♀ at Wien Mus. from Australia. One of them ("Thorey. N. Holl. [Nova Hollandia]. 1859") is referable to *O. avicularia* (Linn.) whereas the other 2, to *fuscipennis* Bigot.

Status: Synonym of *Ornithomya fuscipennis* Bigot 1885 (#16).

peroneura (*Ornithoica confluenta* var.) Speiser 1902c: 91, no sex given.

Types: Lectotype ♀ (Brit. Mus. #1903. 80, *ex* Sandwich Is. Committe Roy. Soc.), fixed by Austen (1903: 263), with printed label "Type" and handwritten name label (not by Speiser), Kona, Hawaii I., Hawaii Is., off short-eared owl [*Asio flammeus sandwichensis* Bloxam]; 1 ♀ (Brit. Mus.), paratype, same accession number and locality, but off *Vestiaria coccinea* Först. and labeled as "*Ornithoica confluenta* Say" (not by Speiser); 1♀ (Bishop Mus., Fn. Hawaii coll.), with no locality label, off short-eared owl. Whereabouts of 1 other paratype unknown.

Status: Synonym of *Ornithoica vicina* (Wk.) 1849 (#9). Once considered by Bequaert (1941b: 290) as synonymous with *O. pusilla* (Schin.).

phaneroneura (*Ortholfersia*) Speiser 1902b: 153, no sex given.

Types: Presumably lost, not now traceable in Berlin Mus. Original series 3 ex., New South Wales, no host record.

Status: Distinct species of *Ortholfersia* (#92), as interpreted by Paramonov (1954) and Maa (1962).

philippinensis (*Ornithoica*) Ferris 1927c: 210, fig. 3, ♂.

Type: ♂ (Stanford Univ.), on 2 slides, Alabat I., Tayabas Prov., Philippine Is., off *Ceyx melanura* Kaup.

Status: Synonym of *Ornithoica exilis* (Wk.) 1861 (#3). The type is a gynandromorphic example.

[*phyllostomatis* (*Lipoptena*) Perty 1833: 190, Brazil, off *Phyllostoma* sp.]

Status: Not a hippoboscid but streblid, now transferred to the genus *Aspidoptera.*

[*phyllostomatis* (*Leptotena*) Macquart 1835: 645, Brazil, off *Phyllostoma*]. Name preoccupied, not Perty 1833.

Status: Not a hippoboscid but streblid, probably conspecific with *phyllostomatis* Perty.

Note: Macquart (*l. c.*) cited Nitzsch's "Voyage du Prince Maximilien de Bavière" as the original reference of this species but failed to give year and page. I could not find this reference.

pilosa (*Olfersia*) Macquart 1843: 434 (=p. 277 of reprint), no sex given.

Type: ♂ (Paris. Mus. *ex* coll. Macquart), unique, now glued on card (originally

pinned), labeled "626", "*Olfersia pilosa*" (both in handwriting by Macquart), "Afrique. Delalande" (handwritten) and "Muséum Paris. Afrique. Delalande" (printed), no host data. The original record reads "D'Afrique. Delalande. Muséum."

Status: Distinct species of *Lynchia* sen. Beq. (#59).

pilosula (*Ornithomyia*) van der Wulp 1903: 432, pl. 13 (6, 6a), "♀?".

Type: ♀ (Brit. Mus. #1903. 133), unique, both wings missing, Volcan de Irazu, Costa Rica, no host record, re-examined by Austen (1903: 262) and Bequaert (1954: 222).

Status: Synonym of *Ornithoctona fusciventris* (Wdm.) 1830 (#35). Once listed by some authors as a distinct species of *Ornitheza.*

pirangae (*Ornithomyia*) Swenk 1916: 135, no sex given.

Type: ♀ (Nebraska Univ.), unique, Juan Viñas, Costa Rica, off *Piranga rubra rubra* Linn., re-examined by Bequaert (1954: 223), listed by Muma (1952: 14), not seen by me.

Status: Synonym of *Ornithoctona fusciventris* (Wdm.) 1830 (#35).

plana (*Ornithomyia*) Walker 1861: 254, no sex given.

Type: 1 ex. (Brit. Mus. #68. 4, *ex* coll. Saunders), probably ♀, in poor condition, glued on card, "Dor. [Dorey, now known as Manokwari, in W. New Guinea]. 12", with Walker's handwritten name label, re-examined by Austen (1903: 264).

Status: Distinct species of *Lynchia* sen. Beq. (#66).

platycera (*Ornithomyia*) Macquart 1843: 436 (=p. 279 of reprint), no sex given.

Types: The original record reads "D'Afrique, de Lalande. Muséum", but there are at present in the Paris Mus., coll. Macquart, no specimens (and even no pin-holes) under the cabinet label "#1042. *O. platycera* M...". In the general collection of the Museum, however, are 2 specimens on one same pin labeled "Muséum Paris. Afrique centrale. Delalande" (printed), "Afrique. Delalande" (written on round label) and "*parva. Ornithomyia*" (in Macquart's handwriting) and also 1♀, "Chili, Gaudichaud" and "*Ornithomyia platycera*" (in Macquart's handwriting too); both without host data. From original descriptions of these 2 species, it appears that the 2 Macquart labels have been wrongly interchanged. To stabilize the generally accepted interpretation of the 2 species and to avoid any possible confusion, the 2 African specimens (sex undeterminable before clearing) are here considered syntypes of *platycera* (which have been long presumed to be lost) and the Chilean ♀, type of *parva* (*cf.* discussion under *parva*). While naming it as *platycera*, Macquart (*l. c.*) described it as "...Antennes larges, triangulaires, en forme de mandibules, ciliées extérieurement, recouvrant la trompe et les palpes..." Therefore it is rather improbable that he should have mixed-up *platycera* with *parva.*

Status: Synonym of *Ornithoctona laticornis* (Mcq.) 1835 (#36). Once listed by some authors as a distinct species of that genus.

plaumanni (*Lynchia*) Bequaert 1943c: 132, fig. 1 A–E, ♀♂.

Types: Holotype ♀, allotype ♂ (Harvard Univ. #29433), Nova Teutonia, Itá, State Sta. Catarina, Brazil, off *Odontophorus capueira capueira* Spix; 1 ♂, 4 ♀ paratypes (Harvard Univ., Deutsch. Ent. Inst.), same locality, off *Crypturellus obsoletus obsoletus* Temm. and

Turdus brevicauda [*Chamaeza campanisona campanisona* Lcht.]; 1 ♀ paratype (Brit. Mus.), Paruni R., Brit. Guiana, off *Crax nigra* Linn.; 1 ♂ paratype (U. S. Nat. Mus.), Sa. Elena, Huachi, Rio Beni, Bolivia.

Status: Distinct species of *Lynchia* sen. Beq. (#55).

plicata (*Ornithomyia*) von Olfers 1816: 102, no sex given.

Type: ♀ (Berlin Mus. #5054), unique, labeled "Isle de France [Mauritius]. Dufrèsn." and "*plicata* v. Olf. *Wied.", no host record. The original record reads "in Insula Franciae (Coll. Com. de Hoffm.)." The meaning of the asterisk mark (*) on name-label is unknown.

Status: Distinct species of *Ornithoctona* (#42).

podicipis (*Ornithoica*) von Röder 1892: 206, no sex given.

Types: Holotype ♀ (Deutsch. Ent. Inst. *ex* Hamburg Mus.), labeled "Sansibar. 29. 10. 1888. Coll. Stuhlmann", "V. v. Röder determ. 1894", "*Ornithoica Podicipis* n. sp. V. v. Röder" and "Mus. Hamburg"; 1 ♀ paratype (Berlin Mus. *ex* Zool. Inst. Halle), labeled "v. *Podiceps.* Sansibar. 29. 10. 88" and "Paratypus det. v. Röder" (the latter in handwriting by Bau); both heavily loaded with parasitic mites and both re-examined by Speiser (1900: 559) and Bau (1929a: 247, 1929b: 11); whereabouts of other 3 paratypes unknown, perhaps in Halle.

Status: A distinct species of *Ornithoica* (#4). Once suppressed as a synonym of *O. confluenta* (Say) and once degraded as its variety.

podopostyla (*Stilbometopa*) Speiser 1904d: 394, no sex given. Misspelled as *nepodostyla*, *podopystyla* and *podostyla* by some later authors.

Types: 1 ♂ (Wien Mus.) here selected as lectotype, "Stieglmayr. Rio Gr. do Sul [Rio Grande do Sul, in S. Brazil]", no host record, with name label by Speiser; 2 ♀♀ (Wien Mus.), paratypes, same data, but with no Speiser's labels; 1 ♀ (Berlin Mus.), labeled paratype, "Mattogross. Rohde S." and "*Stilbometopa podopostyla* Speiser" (the latter in handwriting by Speiser), no host record, not conspecific and even not congeneric with the Wien Mus. material hence the type locality of *podopostyla* should be restricted to Rio Grande do Sul; 1 other paratype, also from Rio Grande do Sul, formerly at Budapest Mus., destroyed.

Status: Here listed as a distinct species of *Stilbometopa* (#46); the paratype from Matto Grosso, central Brazil in Berlin Mus. is referable to *Lynchia albipennis* (Say) 1823 (#48). Ferris (1930c: 64) suggested that *podopostyla* and *fulvifrons* "might be the same thing"; Bequaert (1953a: 329) also doubted their distinctness.

[*podopystyla*, *podostyla*]. See under *podopostyla.*

pollicipes (*Lynchia*) Ferris 1927c: 228, figs. 16–17, ♂♀.

Types: Holotype ♂, allotype ♀ and 1 ♂, 1 ♀ paratypes (Stanford Univ.), each on 2 slides (wings of allotype wrongly labeled as of paratype), Puerto Princesa, Palawan, Philippine Is., off *Astur* sp. and *Prioniturus cyaneiceps* Sharpe.

Status: Synonym of *Lynchia chalcolampra* (Speis.) 1904 (#65). Bequaert (1953a: 272) suggested it might be synonymous with *L. trita* (Speis.).

promiscua (*Ornithoica*) Ferris & Cole 1922: 203, figs. 19–20, ♀.

Types: Holotype ♀ (California Acad. Sci. #930), Castle Hot Springs, Lake County, California, USA, off *Pipilo crissalis carolae* [*P. fuscus carolae* McGregor]; 1 ♀ paratype (California Acad. Sci.), San Francisco, Calif., off fox sparrow [*Passerella iliaca* ssp.]; 1 ♀ paratype (Stanford Univ.), Pacific Grove, Calif., off *Regulus calendula* [*R. calendula cineraceus* Grinn.]; 1 ♀ paratype (Stanford Univ.), King's R., Calif., off *Falco sparverius sparverius* Linn. Types each on 2 slides, re-examined by Bequaert (1954: 107).

Status: Synonym of *Ornithoica vicina* (Wk.) 1849 (#9). Listed by Falcoz (1929: 28) as a possible synonym of *O. turdi* (Latr.).

propinqua (*Olfersia*) Walker 1849: 1141, no sex given.

Types: Lectotype ♂ (not ♀ as labeled) (Brit. Mus. #46. 84), selected by Austen (1903: 265), Jamaica, no host record, with no Walker's name label; 1 ♀ paratype (Brit. Mus.), same data; both re-examined by Bequaert (1955: 346).

Status: Synonym of *Lynchia albipennis* (Say) 1823 (#48). Once listed as a distinct species of that genus, and once doubtfully assigned to *Microlynchia.*

propinqua (*Crataerina*) Austen 1926: 358, ♀.

Type: ♀ (Brit. Mus. #73.34), unique, Syria, off "swifts."

Status: Synonym of *Crataerina melbae* (Rndn.) 1879 (#25).

ptenoletis (*Ornithomyia*) Loew 1857: 9, no sex given.

Type: ♂ (Berlin Mus. #11305), unique, labeled in Loew's handwriting "Mär XI" and "*Ornithomyia ptenoletis* m.", no host record. The original description vaguely gave Germany as type locality.

Status: Synonym of *Ornithomya biloba* Duf. 1827 (#20). Listed by Bezzi (1905: 278) as synonymous with *O. fringillina* Curt.

pteropi (*Lipoptena*) Denny 1843: 314, pl. 17 (5, 5 a–g), no sex given.

Type: Lost, not now traceable in Brit. Mus. and Oxford Univ. The original record is E. Indies, off *Pteropus edulis* E. Geoffr., but the occurrence of a hippoboscid on bats is certainly improbable. *Pt. edulis* is found in W. Sumatra and Nicobar Is. and perhaps *pteropi* was actually from the former island.

Status: Uncertain, probably referable to *L. pauciseta* Edw. 1919 (#116). In that case, it would have priority over the latter name.

pusilla (*Ornithomyia*) Schiner 1868: 374, no sex given.

Types: 1 ♂ (Wien Mus.), labeled "Y" (printed on pinkish paper) and "*Ornithomyia pusilla* Schin." (in author's handwriting), with no collection data; 4 ♀♀ (Wien Mus.), each with "Y" label, one of them labeled "Novara", none with Schiner's name label; all re-examined by Speiser (1904b: 86). One of the ♀♀ here selected as lectotype. The original record reads "Sechs Stücke aus Taiti [=Tahiti], auf *Halcyon venerata* [*Todiramphus vulneratus* Gmel.] gesammelt." Whereabouts of 1 remaining paratype unknown.

Status: Distinct species of *Ornithoica* (#5). The "*pusilla* Schin." of authors is referable to *O. exilis* (Wk.) and *O. vicina* (Wk.). Listed by Falcoz (1929: 28) as a synonym of *O.*

turdi (Latr.).

pusilla (*Lynchia*) Speiser 1902b: 157, no sex given.
Type: ♂ (Berlin Mus. #7510), unique, glued no card, "Cuba. Gundl.", no host record.
Status: Distinct species of *Microlynchia* (#82).

pygmaea (*Stenopteryx*) Macquart 1835: 644, no sex given.
Type: ♀ (Paris Mus., general coll.), unique, with wing-apices folded, with Macquart's handwritten labels "633" and "*Ornithomyia pygmaea.*" No locality and host records on pin and in original description, but the type may have been from France. The original record reads "Du cabinet de M. Percheron."
Status: Synonym of *Ornithoica turdi* (Latr.) 1812 (#7). Once wrongly suppressed by some authors as a synonym of *Crataerina hirundinis* (Linn.).

pyrrhocephala (*Ornithomyia*) (Rondani *in litt.*) Speiser 1904a: 344, no sex given.
Type: ♀ (Genova Mus.), unique, labeled "*Ornithomya pyrrhocephala* Rndn. Messico [Mexico]. D. Rondani 1877" by an unknown head, no host record. This is one of the syntypes of *O. bellardiana* Rndn. (*q. v.*). Rondani never published the name *pyrro-* or *pyrrhocephala.*
Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (#41).

ramphastonis (*Stilbometopa*) Ferris 1930c: 63, figs. 1, 2 A–D & F, ♀.
Type: ♀ (Stanford Univ.), on 2 slides, Camp Pital, Chiriqui Prov., Panama, off *Ramphastos swainsonii* Gould, re-examined by Bequaert (1955: 256).
Status: Here provisionally accepted as a distinct species of *Stilbometopa* (#47). Probably synonymous with *Lynchia penelopes* Weyenb. 1881.

raptatorum (*Olfersia*) Lutz IN Lutz, Neiva & Costa Lima 1915: 181, pl. 28 (3), no sex given.
Types: In Inst. Osw. Cruz, Rio de Janeiro, from "varios estados" (names not individually mentioned in original description) in Brazil, off *Polyborus tharus* [*Caracara plancus brasiliensis* Gmel.], *Milvago chimachima chimachima* Vieill., *Leucopternis palliata* [*L. polionota* Kaup] and some unnamed diurnal birds-of-prey, and from Piauhy, Brazil, off *Cathartes aura ruficollis* Spix. Types partly re-examined by Bequaert (1955: 330), not seen by me.
Status: Synonym of *Lynchia nigra* (Perty) 1833 (#54).

raveni (*Ortholfersia*) Ferris 1924b: 4, figs. 3–4, ♀.
Type: ♀ (Amer. Mus. Nat. Hist.), unique, on 2 slides, Glen Ferneigh, N. S. Wales, Australia, off *Macropus* [*Protemnodon*] sp.
Status: Synonym of *Ortholfersia macleayi* (Lch.) 1817 (#93).

reduvioides (*Myophthiria*) Rondani 1875: 464, fig. (unnumbered), no sex given.
Types: Lectotype ♂ (Genova Mus.), fixed by Guiglia (1957: 195), hind legs missing, "Sarawak" (the original description vaguely gave Insula Bona Fortunae [Borneo] as type

locality), no host record, with Rondani's handwritten label "*Myiophthiria reduvioides*"; 1 ♂ (Firenze Mus. ♯3387), paratype, no locality label on pin but placed under cabinet label by Rondani "rib. Rnd. *reduvioides* Rnd.".

Status: Distinct species of *Myophthiria* (♯31).

[*reduvius* (*Pediculus*) Moufet 1634 Insectorum...Theatrum: 272, fig. England]. nom. prae-Linn.

Status: Synonym of *Melophagus ovinus* (Linn.) 1758 (♯123).

remota (*Ornithomyia*) Walker 1849: 1144, no sex given.

Type: ♀ (Brit. Mus. *ex* coll. Leach), unique, Tristram [error for Tristan] da Cunha I. in S. Atlantic Ocean, no host record, re-examined by Austen (1903: 261), Crichton (1951: 21) and Bequaert (1954: 154).

Status: Synonym of *Ornithomya parva* Mcq. 1843 (♯17). Wrongly synonymized by Bezzi (1905), Austen (*l. c.*) and others with *O. avicularia* (Linn.).

robusta (*Ornithomyia*) van der Wulp 1903: 431, pl. 13 (5, 5a), "♂♀".

Types: Lectotype ♀ (Brit. Mus. ♯1903. 133), selected by Austen (1903: 262), Caché, Costa Rica; 4 ♀♀ (Brit. Mus.), paratypes, from Jalapa in Mexico, Zapote in Guatemala and Volcan de Chiriqui in Panama; all without host data. Types re-emamined by Bequaert (1954: 205); each with van der Wulp's handwritten name label; wrongly assumed by him to be of 1 ♂ and 4 ♀♀.

Status: Synonym of *Ornithoctona erythrocephala* (Lch.) 1817 (♯41). Once listed by some authors as a distinct species of that genus.

rottensis (*Ornithoponus*) Statz 1940: 154, no sex given.

Type: 1 ex. (Los Angeles County Mus.), Rott, Siebengebirge, Rhineland, Germany, in Upper Oligocene shale (Aquitanian), not seen by me.

Status: Distinct (fossil) species of *Lynchia* sen. Beq. (♯76).

roubaudi (*Ornithomyia*) Séguy 1938a: 75, fig. 1, no sex given.

Type: ♀ (Paris Mus.), unique, labeled "Muséum Paris. Congo Francais. Env. de Brazzaville. E. Roubaud & A. Weiss. 1907" (printed), "Bord du Nid des Hirondelles du Fleuve St. Pool. 25. Jan. 08", *Ornithomyia roubaudi* Séguy. Type" (in author's handwriting) and "Type" (printed), first determined by Falcoz as *O. fringillina* Curt.

Status: Synonym of *Ornithomya fur* Schin. 1868 (♯22).

rufipes (*Hippobosca*) von Olfers 1816: 101, no sex given.

Type: ♂ (Berlin Mus. ♯5032), unique, tarsi damaged, labeled "Pr. b. sp. Lichtst." [Prom. bonae Spei. *i. e.*, Cape of Good Hope. Lichtenstein] and "*rufipes* v. Old. *Wied.", both on green paper. The original record reads "in Cap. b. Spei (Coll. Com. de Hoffm.) ... Specimen a cel. Lichtenstein in cap. b. Spei lectum ex *Struthione camelo.*" The meaning of the asterisk mark (*) on name label is unknown.

Status: Distinct species of *Hippobosca* (♯102).

rufipes (*Olfersia*) Macquart 1847b: 229, pl. 7 (17), no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, with Macquart's handwritten name label "*Olfersia rufipes* Macq. n. sp." on pin and placed under Bigot's cabinet label "*O. rufipes* Macq. D. Su. Insul. Reunion", no host record, re-examined by Speiser (1902b: 179). The original record reads "De l'ile Bourbon. M. Fairmaire."

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78). Once listed as a distinct species of that genus and once assigned to *Lynchia*. The "*rufipes* Mcq." of Bequaert (1935a: 399, etc.) is referable to *Ps. garzettae* (Rndn.).

rufiventris (*Ornithomyia*) Bigot 1885: 243, no sex given.

Types: 1♂, 2♀♀ and 1 ex. of undeterminable sex (abdomen missing) (coll. Collin *ex* coll. Bigot), Porto Alègre, Brazil, no host record, re-examined by Speiser (1902b: 169) and Bequaert (1955: 301).

Status: Synonym of *Lynchia americana* (Lch.) 1817 (#49). Once listed as a distinct species of *Olfersia*.

rugicornis (*Ornithoctona*) Maa 1963. See appendix for full description (#42a).

rupicaprinus (*Melophagus*) Rondani 1879: 12, no sex given.

Type: Holotype ♀ (Genova Mus.), labeled "*Antilope rupicapra* [*Rupicapra rupicapra* Linn.]. D. Ghiliani", no locality and Rondani's name labels on pin but listed by Guiglia (1957: 195) as from Alpi occidentali. No definite locality in Italy was mentioned in the original record.

Status: Distinct species of *Melophagus* (#125).

rusaecola (*Lipoptena* subgen. *Lipoptena*) Bequaert 1942a: 112, figs. 1 A–D, 10 A–E, ♀♂.

Types: Original series 29 ♂♂, 33 ♀♀ (2♂♂, 2♀♀ alate) of which 1 alate ♀ paratype (Stanford Univ.), on slide; holotype ♀, allotype ♂ and all other paratypes (Harvard Univ.), in alcohol, except 2 alate ♂ paratypes which are pinned; from Mt. Apo (Galog R., Bakrayon and Mainit R.), Mindanao, and from Mt. Maquiling, Luzon, both in the Philippine Is., off *Cervus* (*Rusa*) *unicolor philippinus* H. Sm.

Status: Distinct species of *Lipoptena* (#117).

samoana (*Lynchia*) Ferris 1927b: 17, figs. 5–6, ♀♂.

Types: Holotype ♀ (Brit. Mus. #1921. 173), Malololelei, Upolu, Samoa, off *Merula samoensis* [*Turdus samoensis* Tristram]; 2 ♀ paratypes (Stanford Univ.), same locality, off *Myiagra vanicorensis* Quoy & Gaimard; 1 ♂ paratype (Harvard Univ.), abdomen missing, same locality. Types each on 2 slides. Whereabouts of allotype ♂ unknown.

Status: Distinct species of *Lynchia* sen. Beq. (#67).

sartus (*Ornithoponus*) Ferris 1925b: 333, figs. 3–4, ♀♂.

Types: Holotype ♀ (Stanford Univ.), on 2 slides, from Loquilocon, Wright, Samar I., Philippine Is., off *Microhierax meridionalis* Grant; allotype ♂ (Stanford Univ.), on 2 slides, same locality, off *Hydrocorax semigaleatus* Tweeddale. Both holo- and allotypes labeled by Ferris as *Icosta sarta*; whereabouts of ♀ paratype unknown.

Status: Synonym of *Lynchia nigrita* (Speis.) 1905 (#73).

schoutedeni (*Lynchia*) Bequaert 1945b: 93, fig. 1, ♂♀.

Types: Holotype ♂ (Tervuren Mus.), Mongende, Congo, off *Halietus africanus* Gmel., not seen by me; allotype ♀ (Harvard Univ.), Naivasha, Kenya, off *Phalacrocorax carbo lucidus* Licht. A number of ♂ and ♀ paratypes in Harvard Univ. and Brit. Mus. are from Entebbe, Uganda, off *H. africanus* and *Anhinga rufa rufa* Daudin; from Bulengugwe, Uganda, off *A. rufa rufa*; from Katwe, Toro, Uganda, off *A. rufa rufa* and *Ph. carbo lugubris* Rüpp.; from Kome I., Lake Victoria; from Dambi Ford, Abyssinia, probably off a cormorant.

Status: Here provisionally accepted as a distinct species of *Lynchia* sen. Beq. (#61), but as suggested by Bequaert (*l. c.*), not impossibly a synonym of *L. massonnati* Falc. 1926.

scutellaris (*Olfersia*) Swenk 1916: 128, no sex given.

Type: ♀ (Nebraska Univ.), unique, Watkin's Station nr. Manchester, Michigan, USA, off *Ixobrychus exilis exilis* Gmel., re-examined by Bequaert (1955: 348) and listed by Muma (1952: 14), not seen by me.

Status: Synonym of *Lynchia americana* (Lch.) 1817 (#49).

seguyi (*Crataerina*) Falcoz 1929: 53, fig. 8, ♂. Misspelled as *segugy* by Bequaert (1951: 9).

Type: ♂ (Paris Mus.), unique, labeled "Muséum Paris. Perou. Arequipa. Dr. E. Escomel 1911" (printed), "20", "Type" (printed) and "*Crataerina Seguyi* Falcoz" (in author's handwriting), no host record, re-examined by Bequaert (1954: 171).

Status: Distinct species of *Crataerina* (#28).

[*segugy*]. See under *seguyi.*

sepiacea (*Lipoptena*) Speiser 1905a: 353, ♀.

Types: 1 ♀ (Berlin Mus. #5065), here considered to be a paratype, labeled "Caffrar. [Caffraria]. Drège", "Type" (printed) and "*Lipoptena sepiacea* Speiser. Type" (the last in author's handwriting), no host record, evidently referable to *L. binoculus* Speis. Other types (which I did not see) in alcohol, from "Witu, Lamu und Wangi [all in Kenya]. 23/8/95", no host record, now not traceable in Berlin Mus., apparently not conspecific with the pinned syntype from Caffraria. To avoid confusion, Kenya should be fixed as the restricted type locality of *sepiacea*, and if the series in alcohol still exists, a lectotype should be selected. As an example of prevailing confusion, it may be noted that 1 ♂, 1 ♀ (Brit. Mus.), Marimba Distr., Nyasaland, off reedbuk [*Redunca arundinum* Bodd.], I. 1910, E. H. A. Pask, determined by Speiser as *sepiacea*, are actually *L. paradoxa* Newst. instead.

Status: Distinct species (as interpreted by Bequaert 1940a, 1942a) of *Lipoptena* (#107). As mentioned above, the paratype from Caffraria is referable to *L. binocula* Speis. 1908 (#105).

setosa (*Lynchia*) Ferris 1927c: 224, figs. 14, 15 a–c, ♂♀.

Types: Holotype ♂ (Stanford Univ.), on 2 slides, Palawan, Philippine Is., off *Bubulcus coromandus* Bodd.; allotype ♀ and 1 prepuparium therefrom (Stanford Univ.), on 3 slides, Lucban, Tayabas Prov., Luzon, Philippine Is., off same host-species. Types re-examined by Bequaert (1955: 349).

Status: Distinct species of *Lynchia* sen. Beq. (#55a). Wrongly suppressed by Bequaert (*l. c.*) as a synonym of *L. albipennis* (Say).

sibiriana (*Anapera*) Gimmerthal 1847a: 12, no sex given. Re-published as n. sp. in 1847b: 208. Misspelled as *sibiricum* by Bezzi and other authors.

Type: Whereabouts unknown, originally described from "Siberia", no host record.

Status: Synonym of *Crataerina pallida* (Latr.) 1812 (#27). Once listed as a distinct species of *Oxypterum*.

[*sibiricum*]. See under *sibiriana*.

simillima (*Lynchia*) Speiser 1904a: 337, no sex given.

Type: 1 ex. of undetermined sex (Amsterdam Mus.), Java, no host record, with Speiser's name label (but not marked as type), re-examined by Bequaert (1955: 411), not seen by me. The only *Pseudolynchia* specimen now in that Museum collected in Java prior to 1904 is a ♀, "Java ?", labelled as *simillima* Speis. in handwriting by de Meijere, not Speiser himself. It bears no collector name (the original description gave Pieper as the collector). Speiser usually did not label each specimen even that of a new species and it is not impossible that this "Java ?" specimen is a syntype.

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78). Once listed as a distinct species of that genus.

simplex (*Ornithomyia*) Walker 1861: 263, no sex given.

Types: Lectotype ♀ (Brit. Mus. #68.4, *ex* coll. Saunders), fixed by Austen (1903: 263), from Manado [Menado], Celebes, "Men. 22", with Walker's handwritten label "*simplex*", no host record; 1 ♂ (Brit. Mus. #60. 76), paratype, same locality and collector (A. R. Wallace) but with no Walker's name label.

Status: Distinct species of *Lynchia* sen. Beq. (#63). The "*simplex* Wk." recorded by Austen (1903: 263) and Bequaert (1953a: 257) from Queensland is referable to *L. australica* (Param.).

sitiens (*Hippobosca*) Boisduval 1835: 667, pl. 12 (16), no sex given.

Type: Apparently lost, not now traceable in Paris Mus. The original record reads "Elle est indiquee comme de Vanikoro", no host data, collected by the "Astrolabe" voyage in the Fiji Is.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42). Once listed by Speiser (1902a: 329) as a distinct species of that genus.

sivae (*Hippobosca*) Bigot 1885: 235, no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, labeled as from India (the original description gave "Indes orientales.—1 spécim." as type locality), re-examined by Speiser (1902b: 162) and Bequaert (1952: 218).

Status: Synonym of *Hippobosca variegata* Megerle 1803 (#103). Once recognized by some authors as a variety of *H. maculata* Lch. which is another synonym of *variegata*.

sordida (*Olfersia*) Bigot 1885: 239, no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, Guatemala, no host record, re-examined by Speiser (1902b: 164), Collin (*in* Bequaert 1933d: 103) and Bequaert (1957: 474).

Status: Distinct species of *Olfersia* (#84). Once assigned to *Pseudolfersia*.

soror (*Ornithoctona*) Ferris 1926: 284, pl. 11 (2 a–d, 4), ♀.

Types: Holotype ♀ (Sarawak Mus.), on 2 slides, Mt. Murud, Borneo, off *Buchanga stigmatops* [*Dicrurus leucophaeus stigmatops* Sharpe], not seen by me; 1 ♀ paratype (Stanford Univ.), same data.

Status: Distinct species of *Ornithoctona* (#38). Once suppressed as a synonym of *O. australasiae* (Fabr.) by Bequaert (1941b: 296).

spinifera (*Feronia*) Leach 1817a: 11, pl. 26 (1–3), no sex given. Re-published in 1818: 557, pl. 26 (1–3).

Type: Leach's type lost, not now traceable in Brit. Mus. and Macleay Mus. The original description gave no definite locality (claimed by Speiser (1902b: 146), without giving reason, as from Java), no host record. Neotype ♀ (Bishop 3134), here selected, Laysan I., Hawaii Is., IV–V. 1959, G. Butler.

Status: Distinct species of *Olfersia* (#90). Once assigned to *Ortholfersia* and *Pseudolfersia* by some later authors. The "*spinifera* Lch." of Ferris & Cole (1922), etc. is partly referable to *Olfersia aenescens* C. G. Thms.; that of Dunn (1934) etc., to *O. bisulcata* Mcq.; that of Johnson (1908: 80) was a mixture of *O. aenescens* C. G. Thms. and *O. sordida* Bigot.

Note: Leach's original description is applicable to *spinifera* (as now generally understood) as well as *aenescens* although his figure of the vein *im* seemingly agrees better with the latter. Speiser (1902b: 146, 179), basing upon 1 ♂, 1 ♀ from Laysan I. collected by Schauinsland, is the first taxonomist to refer the common lousefly of frigate birds to *spinifera* and to provide an adequate redescription of the species. His interpretation is now generally accepted, but his Laysan specimens are apparently lost. To avoid possible confusion, the selection of a neotype from that islet seems to be justified.

stenoptera (*Ornithomyia*) von Olfers 1816: 103, no sex given.

Type: Lost; not now traceable in Berlin Mus. The original record reads "in Germania ...ex *F. Buteone* [*Buteo buteo* Linn.]."

Status: Synonym of *Crataerina hirundinis* (Linn.) 1758 (#23).

[*stipiturae*]. See under *stipituri*.

stipituri (*Ornithomyia*) Schiner 1868: 374, no sex given.

Type: ♀ (Wien Mus.), unique, labeled "X" (no pinkish paper), "*Stipiturus*", and "*Ornithomyia stipiturae* (sic) Schin." (the last in Schiner's handwriting), re-examined by Speiser (1904b: 86). The original record reads "Ein Stück aus Sydney, welche auf *Stipiturus malachurus* Lath. gefangen wurde."

Status: Distinct species of *Ornithoica* (#6).

strigilecula (*Ornithomyia*) Ferris 1923: 57, figs. 3, 4 A–C, ♀ and larva.

Type: Holotype ♀ and 1 prepuparium (California Acad. Sci. #1473), on 2 and 1

slides respectively, Lima, Peru, no host record, re-examined by Bequaert (1954: 223).

Status: Synonym of *Ornithoctona fusciventris* (Wdm.) 1830 (#35). Once listed as a distinct species of that genus.

strigis (*Hippobosca*) Scopoli 1772: 124, no sex given.

Type: Lost. Originally described from no definite locality (probably as suggested by Bequaert (1941b: 262), from nr. Kremnitz, now in Czechoslovakia), off *Strix bubo.*

Status: Uncertain, probably (as suggested by Speiser 1902a: 335) conspecific with *Ornithophila gestroi* (Rndn.) 1878 (#11) (known to be off *Falco*), as the wings were described as "excolores, lineas 3½ [=7.7 mm] longae." Should this be the case, *strigis* would have priority. On the other hand, Bergroth (1901: 149) referred it to "*Olfersia* auctt." [*Lynchia*], and Bequaert (1941b: 263) was in favor of this opinion. But the legs of the only known S. European species of that genus, *L. albipennis* (Say) are not "sordide lutei" and its wings, strictly speaking, not "excolore"; Bezzi (1905: 278) and Falcoz (1929: 30) listed *strigis* as a synonym under *Ornithophila metallica* (Schin.), but the size ("Major *H.* [*Hippobosca*] *equina*" and "Alae...lineas 3½ longae") makes this suggestion unacceptable. Once listed by some authors as a distinct species of *Ornithomya.*

struthionis (*Hippobosca*) Janson 1889: 56, fig. 23, no sex given. Re-published in 1890 as n. sp. in Agric. J. (Capetown) **2**: 293.

Types: Lectotype ♂ (Brit. Mus.), fixed by Austen (1903: 259), tarsi partly damaged, Mt. Steward, Cape Prov., S. Africa, off ostriches, re-examined by Bequaert (1939b: 88); 1 ♂, 1 ♀ paratypes (coll. Collin *ex* coll. Bigot), same data (in Janson's handwriting); 5 ex (Oxford Univ.), paratypes, with a common name label in Janson's handwriting, 2 of them are ♀♀, labeled "Mt. Steward, S. Africa" (by Janson) and "Janson in Miss Ormerod's Inj. Ins. of S. Africa 1889. p. 56. On the ostrich. E. A. Ormerod"; the remainder 3 ex. each labeled "Infests ostriches. Port Elizabeth, South Africa. Miss Ormerod. 1886."

Status: Distinct species of *Struthiobosca* (#96).

[*submetallica* (*Ornitheza*) (Schiner *in litt.*) Speiser 1904c: 177]. Cited as a synonym of *Ornitheza metallica* (Schin.).

Type: See under *metallica.*

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (#12).

submicans (*Ornithoica*) Maa 1963. See appendix for full description (#10b).

subulata (*Lipoptena*) Coquillett 1907: 290, ♀♂.

Types: Holotype ♀ (U. S. Nat. Mus. #10292), Woodstock, New Hampshire, USA, off a deer; 1 ♂, 4 ♀ paratypes (U. S. Nat. Mus.), same data, 2 of the ♀♀ on a slide; all re-examined by Bequaert (1937: 98, 1942a: 81).

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109). The "*subulata* Coq." of Ferris & Cole (1922: 187, figs. 2c, 4) is referable to *Neolipoptena ferrisi* Beq.

sudanica (*Hippobosca*) Bigot 1884: lix, no sex given.

Types: 2 ♀♀ (coll. Collin *ex* coll. Bigot), each with a puparium on pin, labeled "Soudan, Suakin" but no host data on pin or cabinet label, re-examined by Speiser (1902b:

162) and Bequaert (1952: 218). The records published in the original description are E. Sudan, off horses. Suakin is a small town on Red Sea near Port Sudan.

Status: Synonym of *Hippobosca variegata* Megerle 1803 (#103). Once synonymized by Speiser (*l. c.*) with *H. maculata* var. *aegyptiaca* Mcq. (both *maculata* and *aegyptiaca* are here accepted as synonyms of *variegata*).

sulcifrons (*Olfersia*) C. G. Thomson 1869: 611, no sex given.

Type: ♂ (Stockholm Mus. *ex* coll. Kinb.), unique, Panama, no host record, with no name label by Thomson on pin, re-examined by Speiser (1904b: 82) and Bequaert (1957: 436).

Status: Synonym of *Olfersia spinifera* (Lch.) 1817 (#90). Once recognized by some authors as a variety of that species and once as a distinct species of *Pseudolfersia.*

surinamensis (*Lipoptena*) Bau 1930b: 175, ♀♂.

Types: 1 ♂, 1 ♀ (Berlin Mus.), labeled as holotype ♂ and holotype ♀ respectively in Bau's handwriting, and as from "Surinam: Paramaribo" (instead of Macaraibo as given in original description); 1 ♂, 1 ♀ paratypes (Stanford Univ.), on slide, same data, re-examined by Bequaert (1937: 101, 1942a: 134). The "holotype ♀" is here fixed as lectotype.

Status: Synonym of *Lipoptena mazamae* Rndn. 1878 (#121).

suvaënsis (*Lynchia*) Bequaert 1941b: 283, fig. 5 a–e, ♂.

Types: Holotype ♂ (Brit. Mus.), right wing on slide in Harvard Univ., from Suva, Fiji Is., no host record; neallotype ♀ (Bishop Mus.), partly on pin and slide and partly in glycerine, described by Maa (1962: 599, fig. 2), from Nandarivatu, Viti Levu, Fiji Is., no host record.

Status: Distinct species of *Lynchia* sen. Beq. (#55b).

[*synallaxides*]. See under *synallaxidis.*

synallaxidis (*Ornithomyia*) Lynch-Arribálzaga 1881: 90, no sex given. Emended as *synallaxides* in Zool. Rec. for 1881.

Type: Apparently lost, originally described from Río Negro, Argentina, off *Synallaxis* (*Bathmicercus*) *patagonica* [*Asthenes patagonica* d'Orbigny].

Status: Uncertain, possibly synonymous with *Ornithomya parva* Mcq. 1843 (#17). Once listed by some authors as a distinct species of *Ornithoctona.*

tangerii (*Anapera*) Guérin-Méneville 1835: pl. 104 (text published in 1844: 556), no sex given. Emended as *tangeri* by some later authors.

Type: ♀ (Paris Mus.), unique, seriously damaged, labeled "*Anapera* m. (*Ocypterum* Leach). a. *Tangerii* Guér." (in author's handwriting ??), and with 3 printed labels "Guérin-Méneville", "Muséum Paris. Coll. Guérin-Méneville 1871" and "Type", no host record. Originally recorded from Tangier, Morocco, no host data.

Status: Synonym of *Crataerina pallida* (Latr.) 1812 (#27).

tasmanensis (*Ornithomyia*) Macquart 1851: 282 (=p. 309 of reprint), pl. 28 (15), no sex given.

Types: 5 ex. (Paris Mus. ♯2452, *ex* coll. Macquart), heavily or very heavily covered with mold, each with a printed label "Muséum Paris. Tasmanie. Verreaux 3–47" and a handwritten label (on round black-backed paper) "3/47", no host data; one of these 5, here considered a lectotype, probably ♀, with printed label "Type" and Macquart's handwritten label "*Ornithomyia tasmanensis* Macq. n. sp."; of the remaining paratypes (which are without Macquart's name labels), 1 ♂, 1 ♀ conspecific with lectotype, another 2 ♀♀ (1 pregnant and 1 with abdomen missing) referable to *O. biloba* Duf. The original record reads "De la Tasmanie", without mentioning host and collector's names. There is 1 further ♂ paratype now in Harvard Univ. (*ex* coll. G. B. Thompson) exactly with same labels as the 4 paratypes mentioned above; and also in Paris Mus. coll. Macquart, arranged together with lectotype, 1 ex. of undeterminable sex (abdomen missing) with same labels but numbered as "4/40". Both specimens are conspecific with lectotype. In addition, the 4 very heavily molded specimen (probably all ♀♀) (coll. Collin *ex* coll. Bigot) placed under Bigot's cabinet label "*O. tasmanensis* Macq. Tasmanie" (with no Macquart's name labels on pins), probably paratypes, are conspecific with lectotype too.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (♯13). Two of the paratypes, as mentioned above, are referable to *O. biloba* Duf. 1827 (♯20).

tasmanica (*Hippobosca*) Wesché 1903: 385, figs. 1–4, "♂ or ♀".

Types: Lectotype ♀ (Brit. Mus. ♯1903. 106), selected by Austen (1903: 260), glued on card, with no Wesché's name label, from nr. Launceston, Tasmania, off *Macropus ruficollis* [*Protemnodon rufogrisea* Desm.]; 1 ♀ and 1 ex. of undetermined sex (abdomen missing) (Brit. Mus.), paratypes, same data. There are in the Brit. Mus., 2 further pairs from the same locality but are not to be considered paratypes as they were collected (1904) after the publication of original description.

Status: Synonym of *Ortholfersia phaneroneura* Speis. 1902 (♯92). The "*tasmanica* Wesché" of Ferris (1924b: 2, fig. 1–2) and Paramonov (1954: 285) is referable to *Austrolfersia ferrisi* Beq.

taurina (*Hippobosca*) Rondani 1879: 25, no sex given.

Type: ♀ (Firenze Mus. ♯3412), unique, labeled "Stenano G. F. 3. 9. 70" and placed under cabinet label in Rondani's handwriting "*taurina* Rnd.", no locality or host records on pin and on cabinet label. The original records reads "...unico specimine...In montuosis Italiae centralis semel lecta, in Bove [*Bos taurus* Linn., domestic cattle]."

Status: Synonym of *Hippobosca equina* Linn. 1758 (♯97). Listed by Speiser (1908) as a variety of *equina*.

tenella (*Ornithomyia*) (Rogenhofer *in litt.*) Schiner 1864: 646, no sex given.

Types: 2 ♂♂ (Wien Mus.), labeled "*Hirundo rustica*. 1862" and "Von ein Geringe Schwalbe. 1857" respectively, possibly syntypes although there are no other data on the pins and no Schiner's determination labels. These 2 are the only specimens of this species now in the collection to have been collected prior to 1864 and certainly they have been seen by Schiner. The original records read "Rogenhofer fing drei ganz gleiche Stücke

auf einer Schwalbe (*Hirundo rustica* Linn.) und nannte sie in litteris *Or. tenella.*" No precise locality was mentioned, presumably near Wien, Austria. Speiser (1904b: 87) said to have re-examined the types and perhaps did not return them; perhaps assumed these 2 ♂♂ as such. The long series of specimens in the Museum determined by him as *tenella* are evidently all referable to *Ornithomya biloba* Duf. Amongst them, the ♀ with a printed label "Schiner. 1869" represents the only existing specimen with Rogenhofer or Schiner's name. Possibly 1869 is the year when he donated (rather than collected) it to the Museum and in this case, the specimen may have been another syntype from his personal collection.

Status: Synonym of *Ornithomya biloba* Duf. 1827 (#20). Listed by Bergroth (1901: 149), Bezzi (1905: 278) etc. as a synonym of *O. fringillina* Curt.

testacea (*Olfersia*) Macquart 1843: 434 (=p. 277 of reprint), pl. 36 (7), no sex given.

Types: 1 heavily molded ex. (Paris Mus. *ex* coll. Macquart), probably ♀, here selected as lectotype, labeled "Muséum Paris. La Reunion. Bréon 4112–33" (printed), "4112/33" and with Macquart's handwritten label "*Olfersia testacea*", no host data; 1 ♂ (Paris Mus. *ex* coll. Macquart), left wing and all left legs missing, apparently an addition after publication (The original record reads "De l'ile Boubon (sic). M. Bréon. Muséum"), labeled "Muséum Paris. Judée. Roux. 1–36" (printed), "36", "Cotype" (printed), "55" and "No. 627. X. *Olfersia testacea*" (the last in Macquart's handwriting). Types re-examined by Bequaert (1955: 409).

Status: Synonym of *Pseudolynchia canariensis* (Mcq.) 1840 (#78).

Note: As in *Ornithomyia laticornis* (*q. v.*), this species was published as "Nob. S. à B.". This is an apparent error, since *testacea* was not included in Macquart's (1835) Histoire Naturelle des Insectes, Suites à Buffon, Diptères, tome 2.

testacea (*Ornithomyia*) Macquart 1845: 346 (=p. 218 of reprint. 1846), no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, Colombia, no host record, re-examined by Speiser (1902b: 180) and Bequaert (1954: 221). The original record reads "De la Colombie. Collection de M. Fairmaire."

Status: Synonym of *Ornithoctona fusciventris* (Wdm.) 1830 (#35). Once listed as a distinct species of that genus.

[*tolisina* (*Lipoptena*) (Speiser *in litt.*) Muir 1912 Bull. Mus. Comp. Zool. Harvard **54**: 351, 352. Amboina]. nom. nud.

Status: Not hippoboscid but a nycteribiid probably referable to *Nycteribia, parilis* Wk. (see Scott, 1914, Ann. Mag. Nat. Hist. ser. 8, **14**: 320). Speiser never published the name.

traguli (*Lipoptena*) Ferris & Cole 1922: 185, figs. 2 G, 3, ♀♂.

Types: Holotype ♀ and 1 ♀ paratype (Stanford Univ.), Lingga I., Lingga Archip., S. China Sea, off *Tragulus subrufus* [*T. javanicus subrufus*]; allotype ♂ (Stanford Univ.), Tuangku I., S. China Sea, off *T. russeus* [*T. jav. russeus*]; 1 ♂ paratype (U. S. Nat. Mus.), same data; 1 ♀ paratype (Stanford Univ.), Bintang I., Rhio (=Riouw) Archip., off *T. rubens* [*T. jav. rubens*]. All types on slides and re-examined by Bequaert (1942a: 139).

Status: Synonym of *Lipoptena gracilis* Speis. 1903 (#119).

transfuga (*Ornithomyia*) Séguy 1938a: 77, fig. 1, no sex given.

Type: ♂ (Paris Mus.), unique, labeled "Montagues au Nord de Pekin. A. David" (printed), "80/63", "267", "Type" (printed), determined by Falcoz as *O. fringillina* Curt., with handwritten label "*Ornithomyia transfuga*. Type. E. Séguy det.", no host data. There is 1 ♀ in the same series, with exactly the same labels as holotype except lacking the "Type" and Séguy's name label and one of the numbers being "266" rather than "267." This is a typical specimen of *fringillina* Curt.

Status: Synonym of *Ornithomya biloba* Duf. 1827 (#20).

trifasciata (*Melophaga*) von Olfers 1816: 99, no sex given. As a substitute name for "*Pediculus capreoli*" Frisch 1736.

Type: Lost; not now traceable in Berlin Mus., originally described off a deer, from no definite locality [presumably Germany]. Frisch's material was taken off "Rehbock" [*Capreolus capreolus* Linn.] in Germany.

Status: Synonym of *Lipoptena cervi* (Linn.) 1758 (#109).

trita (*Olfersia*) Speiser 1905a: 357, no sex given.

Type: ♀ (Genova Mus.), unique, glued on card, with wings seriously damaged, Mt. Mooleyit, 1600–1900 m, Tenasserim, Burma, off *Megalaema ramsayi* Wald., clearly marked as "Typus" by Speiser on his handwritten name label.

Status: Distinct species of *Lynchia* sen. Beq. (#68).

tropica (*Ornithomyia*) Kishida 1932: 244, fig. 473, ♀.

Types: In coll. Kishida, not seen by me, Taiwan and Philippine Is., off "ouchiu" [*Dicrurus* spp.] and "sanshokui-roi" [*Pericrocotus* spp.].

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42).

tuberculata (*Lynchia*) Ferris 1927c: 224, figs. 12–13, ♂.

Type: ♂ (Stanford Univ.), unique, on 2 slides, Puerto Princesa, Palawan, Philippine Is., off *Corvus pusillus* Tweedd.

Status: Distinct species of *Lynchia* sen. Beq. (#69).

turdi (*Ornithomyia*) Latreille 1812: 544, no sex given. Authorship often wrongly accredited to A. G. Olivier.

Type: Lost, not now traceable in Paris Mus., originally recorded from The Levant, off "Merle solitaire" [*Turdus* spp.].

Status: Distinct species of *Ornithoica* (#7).

unicolor (*Ornithomyia*) Walker 1849: 1144, no sex given.

Types: Lectotype ♂ (Brit. Mus. #47. 62, purchased from P. H. Gosse), selected by Austen (1903: 265), Jamaica, off *Frigata aquilus* [*Fregata aquila* Linn.], with no Walker's handwritten name label; 1 ♀ (Brit. Mus.), paratype, same data; 1 ♀ (Brit. Mus. #46. 84), paratype, Jamaica, no host record. There is also 1 ♀ *Ornithoctona erythrocephala* (Lch.) with same accession number and data as in lectotype, except labeled as off *Ephialtes grammicus* [*Pseudoscops grammicus* Gosse]. Austen (*l. c.*) and Bequaert (1957: 436) suggested

it might have been a syntype of *unicolor*. Probably this is not the case as the specimen does not fit the original description and Walker (1849: 1143) did list "Jamaica. On *Ephialtes grammicus*. From Mr. Gosse's collection" under *Ornithomyia erythrocephala*, j. Its placement beside the lectotype of *unicolor*, as it appears now, only means it has been mixed up since 1849.

Status: Synonym of *Olfersia spinifera* (Lch.) 1817 (#90).

unicolor (*Ornithoica*) Speiser 1900: 556, no sex given.

Type: ♀ (Genova Mus.), unique, labeled "Sumatra. Mt. Singalang. Lugio 1878. E. Beccari" (printed), and with author's handwritten name label, no host record.

Status: Distinct species of *Ornithoica* (#8). The "*unicolor* Speis." of Ferris (1927c: 209, fig. 2) is referable to *O. curvata* Maa.

[*uralensis* (*Hippobosca*) Gmelin 1790 *in* Linnaeus, Syst. Nat. (ed. 13): 2905. Ural]. As n. name for *H. atra* Lepechin.

Status: Not a hippoboscid but bombyliid. Once assigned to *Ornithomya*. According to Speiser (1903b: 71), probably synonymous with *H. atra* Lepechin and referable to either *Bombylius* or *Hemipenthes*.

vagans (*Ornithophila*) Rondani 1879: 21, fig. 1, no sex given.

Type: ♂ (Firenze Mus. #3405), unique, unfed and very pale, with wings folded, no locality and other data on pin and on cabinet label, placed under cabinet label in Rondani's handwriting "*vagans* Rnd." The original record reads "Unicum exemplar legi in ramo arboris vagans...in colle ditionis parmensis."

Status: Synonym of *Ornithophila metallica* (Schin.) 1864 (#12).

variegata (*Hippobosca*) Megerlé von Mühlfeld 1803: [14] (unnumbered), no sex given. Authorship often wrongly accredited to Wiedemann (1830).

Type: Lost, not now traceable in Wien and other museums; originally described from unique specimen from Bengal, India, no host record. Wiedemann's (1830: 603) redescription of this species might have been partly based upon the type.

Status: Distinct species of *Hippobosca* (#103), as interpreted by Bequaert (1939b).

variegata (*Ornithomyia*) Bigot 1885: 245, no sex given.

Type: ♀ (coll. Collin *ex* coll. Bigot), unique, New Zealand, no host record, re-examined by Speiser (1902b: 170).

Status: Synonym of *Ornithomya fringillina* Curt. 1836 (#15).

varipes (*Ornithomyia*) Walker 1849: 1146, no sex given.

Types: Lectotype ♀ (Brit. Mus. #46. 92, *ex* coll. M. Goudet), fixed by Austen (1903: 262) and re-examined by Bequaert (1954: 221), glued on card, left wing missing, right wing damaged, Colombia, no host record, with no Walker's handwritten label; 1 ♀ (Oxford Univ.), possibly paratype, labeled "Colombia" and "*variipes* (sic) Walk. Colombia. Gaudichaud. E. coll. Saund.", also with no Walker's handwritten label.

Status: Synonym of *Ornithoctona fusciventris* (Wdm.) 1830 (#35). Listed as a distinct species of *Ornitheza* by Aldrich (1905: 653, 654).

[*vespertilionis* (*Hippobosca*) Schrank 1803 Fn. Boica: 175. Bavaria, Germany, off *Vespertilio*].

Status: Not a hippoboscid but nycteribiid; not determinable, Speiser (1901) doubtfully referred it to *Nycteribia vexata* Wwd.

[*vespertilionis* (*Hippobosca*) Fabricius 1805: 339. S. America, off *Vespertilio*].

Status: Not a hippoboscid but streblid; now transferred to genus *Strebla.*

vicina (*Ornithomyia*) Walker 1849: 1144, no sex given.

Type: Lectotype ♂ (Brit. Mus. #47. 62 *ex* coll. P. H. Gosse), fixed by Austen (1903: 263), Jamaica, off *Ephialtes grammicus* [*Pseudoscops grammicus* Gosse], re-examined by Bequaert (1954: 106); 1♂ (Brit. Mus.), paratype, same data. There is a third specimen at side of lectotype and with same data, but off *Psittacus leucocephalus* [*Amazona leucocephala leucocephala* Linn.]; abdomen missing, sex not determinable. This might have been a syntype although *Psittacus* was not mentioned in the original description.

Status: Distinct species of *Ornithoica* (#9). Listed by Falcoz (1929: 28) as a synonym of *O. turdi* (Latr.). Once wrongly assigned to *Ornithoctona.*

villadae (*Ornithomyia*) Dugès 1887: 20, pl. 3 (3 a–h), no sex given.

Types: Presumably lost; originally recorded from Mexico (no further detail), off *Buteo calurus* [*B. jamaicensis calurus* Cassin] and *B. bairdii* [*B. swainsoni* Bonaparte].

Status: Probably a synonym of *Lynchia nigra* (Perty) 1833 (#54). Once listed by some authors as a distinct species of *Lynchia* and *Olfersia*, and once doubtfully referred by Bequaert (1933b: 73) to *L. americana* (Lch.).

viridipes (*Hippobosca*) Walker 1858: 235, no sex given.

Type: Originally described from New South Wales, Australia, no host record. In the present Brit. Mus. collection, there is only 1 single specimen (♀) which fits the original description and was labeled as to have been collected prior to 1858 in N. S. Wales. It bears accession number 58.56, with no Walker's handwritten label but is likely the type. According to the Museum ledger, this accession contained 1 *Hippobosca* specimen and other insects and was received 31. V. 1856, collected at Sydney and Clarence R., purchased of Stevens and sent by Turner of Sydney.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (#42). The placing of *viridipes* under *Hippobosca* by Walker is somewhat puzzling, but his description for this "*Hippobosca*" is practically identical to that for his 2 "*Ornithomyia*" species (*batchianica* and *doreica*, both synonymous with *plicata* also) published 3 years later, probably when his concept of these 2 genera had changed. Even if the assumption of the above-mentioned ♀ as the type of *viridipes* is disproved, there is no question that *viridipes*, *batchianica* and *doreica* are conspecific and all synonymous with *plicata.*

viridis (*Ornithomyia*) Latreille 1805: 402, no sex given. As a substitute for *Hippobosca avicularia* of Linnaeus, Fabricius and de Geer.

Type: Same as that of *avicularia* Linn.

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (#13). Listed by Bezzi (1905) and others as a variety of *avicularia.*

viridula (*Ornithomyia*) Meigen 1830: 233, no sex given.

Types: 1 ex (Paris Mus. ♯2702, *ex* coll. Meigen), abdomen missing, probably ♀, labeled "Meigen 2902/40", no host record, here considered lectotype; 1 ♂, paratype, placed with lectotype under same cabinet label, determined by somebody as *viridis* Latr. Originally described from Europe (here restricted as from Germany), off "birds."

Status: Synonym of *Ornithomya avicularia* (Linn.) 1758 (♯13).

vitrina (*Ornithoctona*) Speiser 1904a: 343, ♀.

Type: ♀ (Berlin Mus. ♯6754), unique, teneral, labeled "Wawao [=Vavau, in Tonga Is.]. Dohrn", no host record.

Status: Synonym of *Ornithoctona plicata* (Olf.) 1816 (♯42).

vulgaris (*Melophagus*) McMurtrice 1831 *in* Cuvier, Animal Kingdom (transl.): 323, no sex given. As a substitute for *Hippobosca ovina* Linn.

Type: Same as that of *ovina* Linn.

Status: Synonym of *Melophagus ovinus* (Linn.) 1758 (♯123).

vulturis (*Olfersia*) van der Wulp 1903: 429, pl. 13 (1, 1a), "♀?". Misspelled as *vulturus* by some later authors.

Types: 1 ♂, 1♀ (Brit. Mus. ♯1903. 133), each with author's handwritten name label and with printed "Type" label, Rio Sucio, Costa Rica, off a vulture, re-examined by Austen (1903: 264) and Bequaert (1957: 464). The ♀ is here selected as lectotype.

Status: Synonym of *Olfersia bisulcata* Mcq. 1847 (♯86). Once listed as a distinct species of *Pseudolfersia*, and once as a synonym of *O. spinifera* (Lch.). Listed by Falcoz (1929: 46) as a possible synonym of *O. diomedeae* Coq. [*aenescens* C. G. Thms.].

[*vulturus*]. See under *vulturis.*

[*wahlbergiana*]. See under *wahlenbergiana.*

wahlenbergiana (sic) (*Hippobosca*) Jaennicke 1867: 406, pl. 44 (13), ♀.

Types: Lectotype ♀ (Stockholm Mus.), here selected, labeled "Africa. N'Gami. J. Wahlberg" [The original description gave Caffraria as type locality], no host record, no author's name label; 1 ♀ (Stockholm Mus.), paratype, "Africa. Kuisip. J. Wahlberg"; 1 ♀ (Deutsch. Ent. Inst. *ex* coll. Oldenburg), paratype, labeled "Pniel, Caffraria" and "*Hippobosa* (sic) *wahlbergiana* (sic) J. Jaennicke", possibly both in handwriting by Jaennicke. The original record reads "Caffraria (Wahlenberg)...Coll. von Heyden", thus the rest of syntypes are possibly now in Senckenberg Mus.

Status: Synonym of *Hippobosca rufipes* Olf. 1816 (♯102).

Note: Johan August Wahlberg (1810–1856) collected twice in southern Africa. His first expedition was to Caffraria (1838–45), and second, to SW Africa and N'Gami Lake (1853). Apparently Jaennicke named his species after this collector and hence the name should be *wahlbergiana* rather than *wahlenbergiana.*

wolcotti (*Olfersia*) Swenk 1916: 132, no sex given.

Type: ♀ (Nebraska Univ.), unique, Ann Arbor, Michigan, USA, off *Buteo platypterus*

platypterus Vieillot, re-examined by Bequaert (1955: 314) and listed by Muma (1952: 14), not seen by me.

Status: Distinct species of *Lynchia* sen. Beq. (♯56). Once suppressed as a synonym of *L. americana* (Lch.) by Bequaert (1933b: 78).

III. CHECKLIST AND NATURAL GROUPINGS

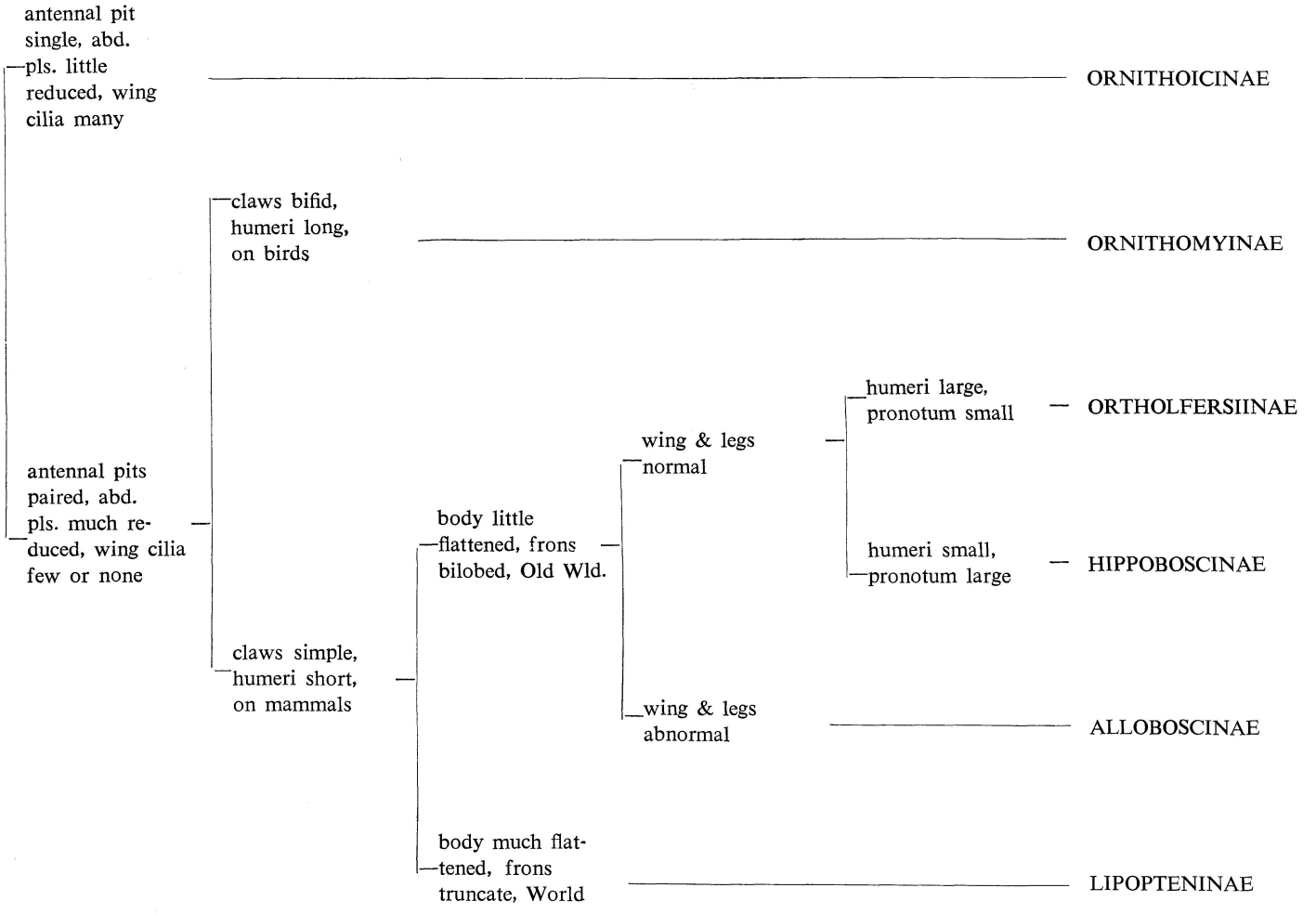
In the following checklist, the arrangement of the subfamilies and genera is modified from Speiser (1908c) and Bequaert (1954) (*cf.* Table 1), whereas that of the species is in alphabetical order under respective genera or species-groups. Brief summarization of reasonably reliable published records regarding distribution and host preference is given under each subfamily, genus and species. Short discussions on systematics are placed under each subfamily and genus, and a complete list of proven and possible synonyms is provided for each genus and species. Keys, either modified from earlier authors or newly constructed, to subfamilies, genera and species-groups are also appended.

For each nominal species, the original combination, author, year and type-locality (-ties) are enumerated. In cases where the type or type-series (in part or as a whole) has been re-examined by me, the name in question is prefixed by an asterisk (*). When the type is definitely or presumably lost, it is prefixed by a dagger (†). Nomenclatorially unavailable names are enclosed in square brackets. Type localities of nominal species restricted or corrected are indicated by the words *restricte* and *recte* respectively. Names available as subgenera (should these be found necessary) are enclosed in parentheses placed after names of respective species-groups.

The names of zoogeographical provinces are modified from Holdhaus (IN C. Schröder 1929 Handb. d. Ent. **2**: 592–1058); those of orders and families of birds are adapted from the list by E. Mayr & D. Amadon (1951 Amer. Mus. Novit. **1496**: 1–42); and those of infraclasses and other suprageneric categories of mammals, from G. G. Simpson (1945 Bull. Amer. Mus. Nat. Hist. **85**: i–xvi & 1–350). The terms mono-, oligo-, pleio- and polyxenous are from Bequaert (1953a: 315).

By evaluating the diagnostic characters in this family as a whole, the number of the genera recognized by previous authors is slightly reduced. On the other hand, the old genus *Hippobosca* is once again split into 2. The subgenera are, at least temporarily, abandoned here. Instead, 13 of the 19 genera are subdivided into 42 species-groups (Table 2). Some of these are so significant that they clearly deserve to be rated as subgenera whereas others are so weakly differentiated that their inclusion is merely a matter of convenience and tradition. Quite obviously, the retaining of such names as *Brachypteromyia*, *Dorcadophagus*, *Echestypus*, *Icosta*, *Lipoptenella*, *Ornithopertha*, *Pseudornithomyia* and *Stenepteryx* as subgenera would necessitate the erection of a number of new ones to accommodate species-groups of equal or even higher significance. In a family with so many genera but so few species and also so numerous published names, I doubt the advisability of adding more names.

The infraspecific categories (subspecies, varieties, formae), employed by Speiser (1908 etc.), Ferris & Cole (1922), Falcoz (1929) and Bau (1930), are also here abandoned. We know too little regarding the intraspecific variability in this family. It seems best to leave such problems to future workers who may have ample and appropriate material from different representative localities and hosts.



Graph 1. Probable interrelationship of the hippoboscid subfamilies.

to diagnose the different taxa and partly to facilitate accurate determinations but not to show phylogenetic affinities. The characters employed are only those believed to be reliable, conspicuous as well as easily observable. They are not necessarily to be of much systematic importance. In couplets including more than one character, they are arranged in order of relative conspicuousness or reliability. The same principles are also applied to the keys to the species- groups under genera. A brief diagnosis of the new genus *Struthiobosca* is included here. For those who prefer hasty determinations, the checking of first 1 or 2 characters in the couplets will usually be enough to meet their purposes.

Key to subfamilies and genera of Hippoboscidae

1. Wing fully developed and functional 2
   Wing reduced in size (particularly in breadth), abnormal in shape and functionless (brachypterous), or, only represented by a veined, very short stump or tiny veinless non-transparent knob ("wingless") 16

2 (1). Tarsal claw actually simple but seemingly bifid (because of the presence of a basal lobe which may be mistaken as basal denticle of claw but can be recognized from claw proper in being much shorter, paler, very seldom pointed at apex, always unevenly pigmented and sclerotized); humeral callus weak, never horn-like 3
   Tarsal claw very deeply bidentate but seemingly trifid (for the same reason given above); humeral callus very strong, horn-like, distinctly protruding latero-cephalad. On birds. (Subfamily Ornithomyinae) 9

3 (2). Wing with 3 crossveins (*rm*, *im* and *mcu* not incl. *h*), hence with 3 completely or partially closed basal cells behind R; apical 1/2 of vein R_{4+5} running very closely to and almost confluent with C; frons anteriorly far from reaching level of antennal apex; right and left basal antennal segments touching each other along median line of face; vertical bristle each arising from nipple-like tubercle; wing densely ciliate along apical and anal margins and setulose at apical area; ocelli present; humeral callus hardly protruding latero-cephalad. On birds. (Subfamily Ornithoicinae) ..... **Ornithoica**
   Wing with only 1 or 2 crossveins (not incl. *h* but note in the *variegata*- group of *Hippobosca*, because of vein R_{2+3} quite unusually short and less slanting, there seems to be 3 crossveins), *mcu* always absent, hence with 1 or 2 closed basal cells behind R; R_{4+5} well separated from C except at extreme apex; right and left basal antennal segments widely apart; apex of frons clearly extending to or beyond level of antennal apex; vertical bristle not arising from nipple-like tubercle; apical and anal margins of wing not or hardly ciliate. On mammals 4

4 (3). Wing (caducous soon after emergence) always quite thin, clear hyaline, with only 3 distinct longitudinal veins and only 1 long oblique crossvein behind C+Sc; frons much shorter than wide, with anterior margin broadly truncate or somewhat convexly curved, never notched at middle; mesothoracic spiracle always clearly visible from above; humeral callus hardly protruding latero-cephalad. On Ruminantia. (Subfamily Lipopteninae) 5
   Wing (non-caducous) almost always moderately thin and slightly tinted, with

5–6 distinct longitudinal veins and 2 crossveins behind Sc; frons longer than wide or about as long as wide, with anterior margin distinctly notched at middle to form 2 well defined lobes or prongs; mesothoracic spiracle either small, or only partially visible or entirely invisible in dorsal view of the insect; ocelli always absent 6

5 (4, 19). Fore coxa without dorsal retrograde spur; abdomen with distinct median tergal plates; basal sternum of abdomen crescent-shaped, with concave hind margin; fronto-orbital bristles few, generally 2–3 at each side; ocelli sometimes absent..... **Lipoptena**

Fore coxa with distinct dorsal retrograde spur; abdomen with no median tergal plates, its basal sternum elliptic, with convex hind margin; fronto-orbital bristles numerous, about 15 at each side; ocelli always present..... **Neolipoptena**

6 (4). Pronotum large and clearly visible, raised about as high as mesonotum, forming an easily observable neck-like segment between head and mesonotum; occipital margin broadly rounded, not closely fitting anterior margin of prescutum; wings coarsely corrugate throughout (not distinctly so in slide specimens), membrane bare, never setulose; humeral callus hardly protruding latero-cephalad; scutellum with 3–30 closely arranged preapical bristles. On ostriches, Carnivora, Perisso- and Artiodactyla. (Subfamily Hippoboscidae)..... 7

Pronotum vestigial, lying on a much lower level than does mesonotum, not or hardly visible in dorsal aspect of the insect; occipital margin almost straight, very closely fitting anterior margin of prescutum; wing at most finely and partially wrinkled but (except in 1 species) extensively setulose; humeral callus distinctly protruding latero-cephalad; scutellum with only 2 (1+1) widely apart preapical bristles. On marsupials (wallabies). (Subfamily Ortholfersiinae) 8

7 (6). Empodium of leg feathered from base to apex; fore coxa with distinct dorsal spur; crossvein *im* short, almost vertical to M_{1+2}, less than 1/2 as long as 2nd abscissa of M_{1+2}; scutellum rectangular and posteriorly almost truncate, with bristles crowded together into 2 (1+1) transverse series widely apart; median tergal plates of abdomen absent in both sexes; legs relatively long and slender. On ostriches. Orthotype: *Hippobosca struthionis* Janson 1889, original designation..... **Struthiobosca**

Empodium of leg bare, bristle-like, at most feathered at extreme base; fore coxa without dorsal spur; crossvein *im* much longer, not as above described; scutellum either not rectangular and not posteriorly truncate, or its preapical bristles forming a continuous or nearly continuous transverse series (seldom forming 2 narrowly interrupted groups but in that case, the bristles not quite crowded together); median tergal plates of abdomen (except in *variegata*-group) present in ♂ or in both sexes; legs relatively short and robust. On mammals ..... **Hippobosca**

8 (6). Vein R with 3 branches (R_1, R_{2+3}, R_{4+5}), R_{4+5} dorsally with strong setae; dorsolateral area of mesothorax with very heavy spine-like setae; frontal process long, apically extending to or beyond level of midlength of palpus.... **Ortholfersia**

Vein R with only 2 branches (R_1, Rs); Rs bare, not setose; dorsolateral area of mesothorax without spine-like setae; frontal process short, apically extend-

ing only to level of basal 1/3 of palpus..... **Austrolfersia**

9 (2). Wing with 3 crossveins (*rm*, *im*, *mcu*) not incl. *h* hence with 3 completely or partially closed basal cells behind R-branches; vein Cu+1A fully developed, deeply pigmented, more or less stronger than 2A; humeral crossvein (*h*) distinct; scutellar bristles 4–50 in number 10

Wing with only 1 or 2 crossveins, always lacking *mcu*, hence with only1 or 2 closed basal cells behind R-branches; vein Cu+1A atrophied, hardly visible except at extreme base, but 2A fully developed, deeply pigmented and taking place of the former vein; humeral crossvein (*h*) absent or poorly developed; scutellum at most with 2 bristles 13

10 (9). Vein R_{2+3} with apical 3/5 fused with C; axillary lobe subtriangular, exceptionally large; vein 2A prominent and deeply pigmented; antenna small, narrow; ocelli present; wing membrane entirely bare..... **Ornithophila**

Vein R_{2+3} well separated from C except at extreme apex; axillary lobe lanceolate, of usual size; vein 2A hardly visible, never deeply pigmented..... 11

11 (10). Antenna small, narrow, without outer dorsal rim, never leaf- or spoon-like; wing membrane extensively setulose at apical 1/2–2/3; abdomen always with median tergal plates in both sexes; metapleural process not developed; axillary cord fringed with pale soft hairs ..... **Ornithomya**

Antenna large, broad, leaf- or spoon-shaped, with distinct outer dorsal rim; wing membrane bare, at most with small setulose patch (-es) near apex; abdomen often without median tergal plates in ♀; either metapleural process very strongly developed or axillary cord fringed with black stiff bristles 12

12 (11). Metapleural process very strongly produced, anvil-shaped; lower calyptere small, axillary cord sparsely fringed with bristles; scutellar bristles dense and numerous (40–50), arranged somewhat comb-like; metasternal process fully developed, strongly protruding over base of hind coxa; ocelli absent ..... **Stilbometopa**

Metapleural process indistinct; lower calyptere exceptionally large, axillary cord densely fringed with bristles; scutellar bristles few, sparse, not arranged comb-like; metasternal process wanting; ocelli present..... **Ornithoctona**

13 (9). Wing with only 1 crossvein (*rm*), hence cells *2bc* and *1m* entirely confluent ... 14

Wing with 2 crossveins (*rm* and *im*, the latter largely unpigmented and easily overlooked), hence cells *2bc* and *1m* at least partially separated 15

14 (13). Hind scutellar margin truncate or subtruncate, sharply edged, with a series of long minute setigerous tubercles at each corner; metapleural process indistinct; metasternal process well developed, spur-like, overlapping part of hind coxa; inner orbit and anterolateral area of prescutum densely coated with long recumbent setae ..... **Pseudolynchia**

Hind scutellar margin distinctly convex, roundly edged, without setigerous tubercles; metapleural process prominent, conical; metasternal process absent; inner orbit and anterolateral area of prescutum with only few short suberect setae ..... **Microlynchia**

15 (13). Face as usual, postvertex much smaller and shorter than and well defined from mediovertex; lunula partly or completely separated from interantennal

area by transverse suture; metapleural processes indistinct; scutellum with 2 strong bristles..... **Lynchia**

Face quite unusual in appearance, mediovertex confluent with postvertex or when very weakly definable then much smaller and shorter than postvertex; lunula and interantennal area entirely confluent; metapleural process very prominent, forming a somewhat reverted L-shaped bar at side of scutellum; scutellum with no bristles but only ordinary soft short hairs ..... **Olfersia**

16 (1). Tarsal claw very deeply bidentate but seemingly trifid (*cf.* couplet 2); humeral callus horn-like, very strongly protruding latero-cephalad; wing always with distinct vein (-s), usually with closed cells but never completely bordered by a strong vein. On birds. (Subfamily Ornithomyinae)..... 17

Tarsal claw actually simple but seemingly bifid (*cf.* couplet 2); humeral callus not or hardly protruding latero-cephalad; wing usually represented by a veinless solid knob or veined (with no closed cells) short stump, when rarely (only in Alloboscinae, 1 Malagasy species) with distinct veins and closed cells then completely bordered by a strong vein. On mammals 18

17 (16). Wing strongly narrowed apicad, with 6 longitudinal veins behind Sc and with hind 2/3 of surface traversed by 3–4 veins; eye about 2× as long as wide; ocelli absent, vestigial or distinct..... **Crataerina**

Wing subelliptic, very broadly rounded at apex, with but 1–3 longitudinal veins and with hind 2/3 to 3/4 of surface entirely veinless; eye not so long and narrow as above described; ocelli always absent..... **Myophthiria**

18 (16). Wing about 2.5× as long as wide, extending apically slightly beyond scutellum, with uniformly strong veins and closed cells, and completely encircled by a strong vein; hind femur almost as long as thick; fore tarsus with some spatulate setae; relative lengths of 1st and 2nd tarsomeres of hind leg about 5 : 2; frons longer than wide, anteriorly deeply notched. On lemurs. (Subfamily Alloboscinae)..... **Allobosca**

Wing represented by either a veinless minute knob or veined (with no closed cells) short stump; never as above described; fore femur much longer than thick; fore tarsus with only ordinary setae, no spatulate ones; relative lengths of 1st and 2nd tarsomeres of hind leg about 1 : 1; frons much wider than long, anteriorly truncate or weakly convexly curved. On Ruminantia. (Subfamily Lipopteninae)..... 19

19 (18). Wing represented by a veinless solid subcylindric knob; eye narrower than antennae, about 4× as long as wide; haltere entirely absent..... **Melophagus**

Wing represented by a veined transparent flat stump; eye about 2× as wide as antenna, hardly longer than wide; haltere present..... 5

The only complete World lists of genera and species of the Hippoboscidae heretofore published are by Leach (1817) and Speiser (1908c). But the former author did not recognize *Melophagus* sen. lat. as a part of the family, whereas the latter did not provide synonymy. A retrospect of the number (and nomenclature) of the distinct species as estimated by Beqauert (1954) and listed by Speiser (*l. c.*) in comparison with that in Table 2 and in the following pages seems to be quite interesting:

Ornithoica. Here listed 12 species; Bequaert estimated 6 or 7; Speiser listed 6, since

then 4 nominal species were added.

Ornithophila. Here listed 2 species; Bequaert estimated 1 or 2, as *Ornitheza*; Speiser listed 5 (as *Ornitheza* too) of which *andajensis*, *odontoscelis* and *pallipes* are synonyms; no species were added since then.

Ornithomya. Here listed 10 species; Bequaert estimated 12. Speiser listed 14, of which *anchineuria*, *lagopodis*, *paricella* and *perfuga* are synonyms; *butalis*, *obscurata* and *pilosula* were wrongly included; whereas *biloba* and *parva* were overlooked or wrongly suppressed. Since Speiser's paper, 7 nominal species were added.

Crataerina. Here listed 6 species; Bequaert estimated, including *Stenepteryx*, about 8; Speiser listed (incl. *Stenepteryx* too) 5 (plus 2 varieties), of which *cypseli*, *kirbyana* and *sibiriana* are synonyms, and *pygmaea* was wrongly included. Since Speiser, 6 nominal species and 1 variety were added.

Myophthiria. Here listed 5 species; Bequaert estimated 4; Speiser listed, including *Brachypteromyia*, 3, with *capsoides* wrongly suppressed. Since Speiser, 2 species were added.

Ornithoctona. Here listed 10 species; Bequaert estimated 9 too. Speiser listed (including *Ornithopertha*) 17 (plus 3 varieties), of which *anthracina*, *asiatica*, *bellardiana*, *columbae*, *doreica*, *geniculata*, *haitiensis*, *javana*, *melaena*, *nebulosa*, *nigricans*, *platycera*, and *vitrina* are synonyms; and *synallaxidis* was wrongly included; meanwhile, *laticornis* and *plicata* were either overlooked or wrongly suppressed. Ten nominal species were added since Speiser's paper.

Stilbometopa. Here listed 5 species; Bequaert estimated 5 too; Speiser listed 3, but 2 nominal species were added since then.

Lynchia. Here listed 34 species (including 2 doubtful ones); Bequaert estimated about 30. Speiser listed 24, under *Icosta*, "*Ornithophila*" and "*Olfersia.*" Synonyms are *acarta*, *ardeae*, *botauri*, *fusca*, *intertropica*, *macquartii*, *pallidilabris*, *papuana*, *propinqua* and *rufiventris*; wrongly included was *testacea*; overlooked or wrongly suppressed were *pilosa* and *plana.* Since Speiser's paper, 23 nominal species were added.

Pseudolynchia. Here listed 3 species; Bequaert estimated 3 too. Speiser listed under "*Lynchia*", 11, of which *capensis*, *exornata*, *falcinelli*, *lividicolor*, *maura*, *rufipes* and *simillima* are synonyms; and *penelopes* and *pusilla* were wrongly included; meanwhile *canariensis* and *garzettae* were overlooked or wrongly suppressed. One species was added since Speiser's paper.

Microlynchia. Here listed 4 species; Bequaert estimated 3, but in 1955, readjusted to 4; Speiser listed, under "*Lynchia*", 1. Since then, 3 nominal species were added.

Olfersia. Here listed 7 species; Bequaert estimated 7 too. Speiser listed under *Pseudolfersia*, 10 (plus 1 variety), of which *diomedeae*, *mexicana*, *mycetifera*, *sulcifrons* and *vulturis* are synonyms; meanwhile *fossulata* was overlooked or wrongly suppressed. One nominal species was added since then.

Ortholfersia. Here listed 4 species; Bequaert estimated 3 or 4. Speiser listed 3, of which *tasmanica* is a synonym; 3 nominal species were added since then.

Austrolfersia. Unknown to Speiser. As by Bequaert, here listed 1 species.

Struthiobosca. As by Speiser and Bequaert (under *Hippobosca*), here listed 1 species. One nominal variety was added since Speiser's paper.

Hippobosca. Here listed 7 species; Bequaert estimated 8 (incl. *Struthiobosca*). Speiser listed 9 species plus 3 varieties (incl. *Struthiobosca*), of which *aegyptiaca, capensis, dromedarina, fossulata, maculata* Lch., *sivae* and *taurina* are synonyms, and *variegata* was wrongly suppressed. Since then 4 nominal species and 2 varieties were added.

Allobosca. As by Speiser and Bequaert, here listed 1 species. None added since Speiser's paper.

Lipoptena. Here listed 17 species; Bequaert estimated 21 (incl. *Echestypus*). Speiser

Table 2. Census of the known Recent Hippoboscidae
(Incl. 6 n. spp. described in this paper but not the fossil sp.).

Subfamily and genus	Number of species-groups	Number of available subgeneric names	Total number of distinct species	Number of distinct species each Region						
				Palaearctic	Ethiopian	Malagasy	Oriental	Australasian	Nearctic	Neotropical
Ornithoicinae										
Ornithoica	2	0	12	3	2	?	7	2(1)	2	2
Ornithomyinae										
Ornithophila	—	—	2	2	1	?	1	1	—	—
Ornithomya	3	2	10	4	1	?	1(1)	1(3)	1	3
Crataerina	3	2	6	3	1	?	1	—	—	1
Myophthiria	3	2	5	—	—	—	3	1	1	1
Ornithoctona	3	2	10	—	2	2	3	1(1)	2	5
Stilbometopa	—	—	5	—	—	—	—	—	1	4
Lynchia	11	3	33	2	6	?	17	3	5	9
Pseudolynchia	2	0	3	2	2	1	2	1	1(1)	1(1)
Microlynchia	2	0	4	—	—	—	—	—	1	4
Olfersia	4	0	7	3	1	1	2	2	1	7
Ortholfersiinae										
Ortholfersia	2	0	4	—	—	—	—	E	—	—
Austrolfersia	—	—	1	—	—	—	E	—	—	—
Hippoboscinae										
Struthiobosca	—	—	1	—	E	—	—	—	—	—
Hippobosca	3	0	7	3	5	1	3	—(1)	—	—
Alloboscinae										
Allobosca	—	—	1	—	—	E	—	—	—	—
Lipopteninae										
Lipoptena	3	3	17	5	4	—	5	—	1(1)	2
Neolipoptena	—	—	1	—	—	—	—	—	E	—
Melophagus	2	2	3	E	—(1)	—(1)	—(1)	—(1)	—(1)	—(1)
Total	42	16	132	30	26(1)	5(1)	44(2)	15(7)	17(3)	39(2)

Note: "E"=endemic to the Region in question. Number of established, introduced species in parentheses.

listed 12 species plus 2 varieties (incl. *Echestypus*) of which *alcis*, *conifera*, *mexicana*, *moschi*, *parvipalpis* and *subulata* are synonyms; whereas *mazamae* and *paradoxa* were overlooked or wrongly suppressed. Since Speiser, 10 nominal species were added.

Neolipoptena. Unknown to Speiser. As by Bequaert, here listed 1 species.

Melophagus. As by Speiser, here listed 3 species; Bequaert estimated 2.

In short, according to Bequaert's estimation, there were then about 126 to 129 distinct species probably including the new ones to be described by himself in 1955. On the other hand, Speiser recognized 127 species and 11 varieties as distinct, of which 68 were later proven to be synonyms, leaving only 70 really distinct. But if the overlooked or wrongly suppressed ones *biloba*, *canariensis* etc. are counted, the net number of distinct species in Speiser's list is 81. Since Speiser, 76 nominal species and 4 nominal varieties were added to the family.

Subfamily ORNITHOICINAE Bequaert 1942

Distribution: Tropics and subtropics of the World, rare in temperate countries and 2 of the species have been taken as far north as about 50° N. Lat. Most of the species are rather localized in distribution.

Host preference: Not well known. Most species show little host specificity and occur on a variety of unrelated birds, chiefly Passeri-, Strigi- and Ciconiiformes.

Systematics: Badly in need of revision. Containing only 1 genus. The subfamily has been included in *Ornithomya* in its broadest sense until 1878 when Rondani erected the genus *Ornithoica*. Speiser (Table 1) placed *Ornithoica* at the beginning of his 5th subfamily and immediately before *Ornithomya*. Bequaert (1942a, 1954) considered it representing an independent subfamily and the most primitive Recent Hippoboscidae. His reasoning was on the basis of the completely separated 1st antennal segment and notopleura, complete ocelli and venation, concealed inter-antennal area, little flattened thorax, weak humeri, simple prosternum, simple tarsal claws, non-caducous wings, non-reduced tergal plates (in both sexes), large alula and wide host and distributional ranges. To the above-enumerated characters, the dense cilia on the apical and anal wing-margins may be added. Meanwhile, the nipple-like tubercles at bases of vertical bristles, the crowding of apices of R-branches toward C and the strong sexual dimorphism in the chaetotaxy on hind trochanters and abdominal venter are unknown to other subfamilies and apparently represent specialized characters instead. The simple tarsal claws, as a primitive character within the family, are also to be reconsidered.

Genus **Ornithoica** Rndn. 1878 (type: *beccariina* Rndn.)

Distribution & host preference: Same as in the subfamily.

Systematics: The genus is generally neglected by collectors and consequently rare in collections and difficult to ascertain ranges of host relationship, geographic distribution and structural variability. The separation of the species is particularly difficult in this genus and there exist a lot of confusion and misidentifications in literature and in collections. Synoptic keys provided by Speiser (1900, 1902a) and Bau (1922) are hardly of any value. The 12 species listed below fall into 2 groups.

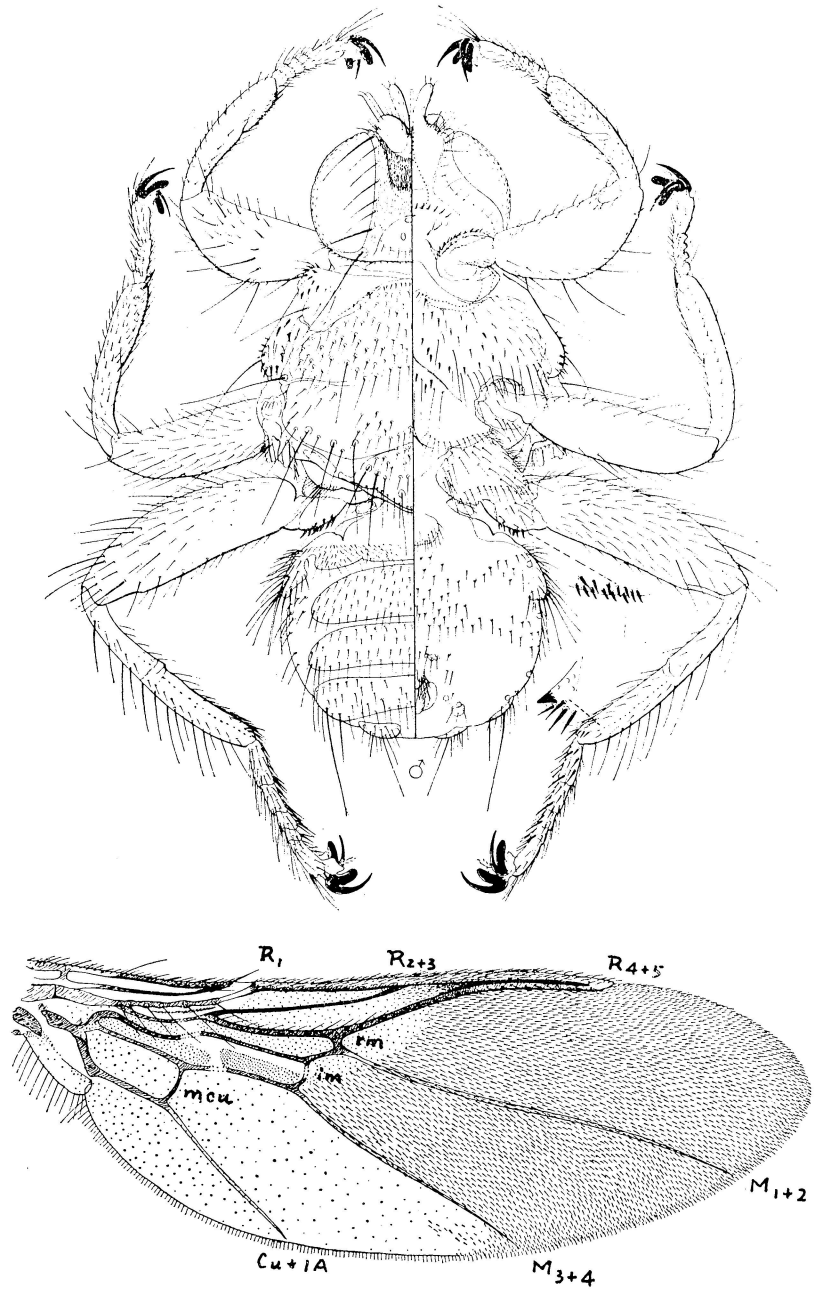


Fig. 1. *Ornithoica exilis* (Wk.), ♂ with left and right halves of the figure representing dorsal and ventral aspects respectively and with wing detached and placed at the bottom. (After Ferris 1927 Ins. Samoa **6** (1): 12–13, originally labeled as *O. pusilla* Schin.). The venational notations are mine.

KEY TO SPECIES-GROUPS OF ORNITHOICA

Wing-setulae confined to apical 1/2 of cell *3r* and forming very small patches in cells *1m* and *2m*; 1st and last median tergal plates in ♀ strongly dilated and in former curved cephalad at both ends and latter, strongly produced caudad at middle; ♂ hind trochanter without spine-like setae; thoracic dorsum with strong metallic lustre.....**curvata**-group

Wing-setulae practically covering entirety of cells *3r* and *1m* and forming small to medium-sized patch (-es) at apex of cell *2m*; 1st and last median tergal plates in ♀ both normal, transversely straight, similar in shape and size to others; ♂ hind trochanter with spine-like setae; thoracic dorsum with no, or very little, metallic lustre..... **turdi**-group

(i) **turdi**-group

1. *Ornithoica beccariina Rndn. 1878 (Amboina).

DISTRIBUTION: Wallacea Subregion (Amboina).

HOST PREFERENCE: Hardly known, only recorded from *Casmerodius* (Ardeidae, Ciconiiformes).

2. Ornithoica confluenta (Say) 1823.

†*Ornithomyia confluenta* Say 1823 ("USA"; *restricte*: Florida).

DISTRIBUTION: New World tropics and subtropics, sporadic.

HOST PREFERENCE: Little known, probably oligoxenous, recorded from 4 genera of birds in Ardeidae, Ciconiiformes.

3. Ornithoica exilis (Wk.) 1861.

**Ornithomyia exilis* Wk. 1861 (W. New Guinea).
Ornithoica philippinensis* Ferr. 1927 (Philippines). **New Synonymy.
Ornithoica distincta Kishida 1932 (Japan).

DISTRIBUTION: Probably throughout Oriental Region, spreading northward to Japan.

HOST PREFERENCE: Polyxenous; recorded (largely under the name "*pusilla* Schin." with which some of the records might have been mixed-up) from 30 bird-genera in Passeri-, Columbi-, Coracii- Strigi-, Falconi-, Grui-, Psittaci-, Cuculi-, Caprimulgi- and Piciformes. Probably the first 4 of these orders are preferred.

4. *Ornithoica podicipis Röder 1892 (Zanzibar I.).

DISTRIBUTION: E. African Subregion.

HOST PREFERENCE: Hardly known, only recorded from Ardeidae (2 genera), Ciconiiformes and Podicipidae (1 genus), Podicipiformes. Very likely the former family is preferred.

5. Ornithoica pusilla (Schin.) 1868.

**Ornithomyia pusilla* Schin. 1868 (Tahiti).

DISTRIBUTION: Polynesian Subregion (Tahiti).

HOST PREFERENCE: Hardly known, only recorded from *Todiramphus* (Alcedinidae,

Coraciiformes).

6. Ornithoica stipituri (Schin.) 1868.

**Ornithomyia stipituri* Schin. 1868 (N. S. Wales).
Ornithoica distenta* Speis. 1902 (NE New Guinea). **New Synonymy.
Ornithoica momiyamai Kishida 1932 (Japan). **New Synonymy.**

DISTRIBUTION: Oriental Region, widely spread, extending to Japan and Australotasmanian Subregion.

HOST PREFERENCE: Hardly known, recorded from 5 bird-genera in Passeri- and Coraciiformes.

7. Ornithoica turdi (Latr.) 1812

†*Ornithomyia turdi* Latr. 1812 (The Levant).
Stenopteryx* (sic) *pygmaea* Mcq. 1835 (no locality; *restricte*: France). **New Synonymy.

DISTRIBUTION: Mediterranean, E. African and W. African Subregions.

HOST PREFERENCE: Polyxenous, recorded from about 50 bird-genera in Passeri-, Falconi-, Cuculi-, Strigi-, Coracii-, Galli-, Columbi- and Piciformes. Probably the first 4 of these orders are preferred.

8. *Ornithoica unicolor Speis. 1900 (Sumatra).

DISTRIBUTION: Malaysian Subregion (Sumatra).

HOST PREFERENCE: Unknown.

9. Ornithoica vicina (Wk.) 1849.

**Ornithomyia vicina* Wk. 1849 (Jamaica).
Ornithoica confluenta* var. *peroneura* Speis. 1902 (Hawaii Is.). **New Synonymy.
**Ornithoica promiscua* Ferr. & Cole 1922 (California).
**Ornithoica melaleuca* Bau 1922 (Cuba).

DISTRIBUTION: New World, widely spread; introduced and established now in Hawaiian Is.

HOST PREFERENCE: Polyxenous, recorded from 86 bird-genera in Passeri-, Strigi-, Falconi-, Galli-, Pici-, Psittaci-, Columbi-, Tinami-, Ciconii- and Cuculiformes. Probably the first 3 of these orders are preferred and the others are not normal hosts.

(ii) **curvata**-group

10. *Ornithoica curvata Maa 1963 (Thailand, Borneo).

DISTRIBUTION: Indo-Chinese and Malaysian Subregions.

HOST PREFERENCE. Polyxenous; known from 6 bird-genera in Pici-, Coracii-, Cuculi- and Passeriformes; probably the first 3 of these orders serve as normal hosts.

10a. *Ornithoica hirtisternum Maa 1963 (NE New Guinea).

DISTRIBUTION: Papuan Subregion (Vogelkop Penin.).

HOST PREFERENCE: Little known, only recorded from 1 bird-genus each in Ciconii- Coracii- and Passeriformes.

10b. *Ornithoica submicans Maa 1963 (Philippine Is.).

DISTRIBUTION: Philippine Subregion.

HOST PREFERENCE: Little known, only recorded from *Penelopides*, *Craniorhinus* and *Buceros* (all Bucerotidae, Coraciiformes).

Subfamily ORNITHOMYINAE (Bigot) 1853

Distribution: World-wide, with 1 of the genera confined to the Old, and 2 to the New World; but the Old World has much more species. The only known fossil hippoboscid belongs here.

Host preference: Known to attack Tinamiformes (Palaeognathae) and most orders of Neognathae birds, not yet recorded from Sphenisci- and Diatrymiformes. Most of the species in this subfamily are pleio- or polyxenous, some oligo- or monoxenous.

Systematics: As listed below, containing 10 described genera and 84 species which comprise about 1/2 of the total genera and 2/3 of the species of the family. Speiser (1908) recognized not less than 14 genera and placed them under subfamilies Olfersiinae (excluding *Ortholfersia*) and Ornithomyinae (excl. *Ornithoica*). Meanwhile, these 2 "subfamilies" were arranged at the beginning and end, respectively, of the family (*cf.* Table 1). On the other hand, Bequaert (1954) discussed in detail the evolution within this subfamily and re-arranged the 11 genera he recognized into 4 groups. One of these groups, represented solely by the genus *Olfersia*, was rated as one of the 2 tribes. As shown in Graph 2, it seems that the fusion of lunula with interantennal area is phylogenetically less significant than the atrophy of the vein Cu+1A together with its replacement by 2A (the latter is also found in the Hippoboscinae and Ortholfersiinae) and that the genus *Ornithophila* (=*Ornitheza*) should represent a group of its own. Therefore the present scheme divides the Ornithomyinae into 2 major groups and 5 subgroups: Ia, *Ornithophila*; Ib, *Ornithomya*, *Crataerina*, *Myophthiria*; Ic, *Ornithoctona*, *Stilbometopa*; IIa, *Lynchia*, *Pseudolynchia*, *Microlynchia*; IIb, *Olfersia*. The name *Ornitheza* of Speiser and Bequaert is here replaced by *Ornithophila*, and *Stenepteryx* of both authors and *Icosta*, *Ornithopertha* and *Brachypteromyia* of Speiser are suppressed.

The New World genera and species of this subfamily have recently been monographed by Bequaert (1955–57), but the Old World ones are badly in need of revision. Many "old" forms are to be re-characterized and their variabilities and interrelationships to be clarified. On the other hand, there exist in collections a number of novelties to be named and described. These are particularly true for the extensive genus *Lynchia* sensu Bequaert.

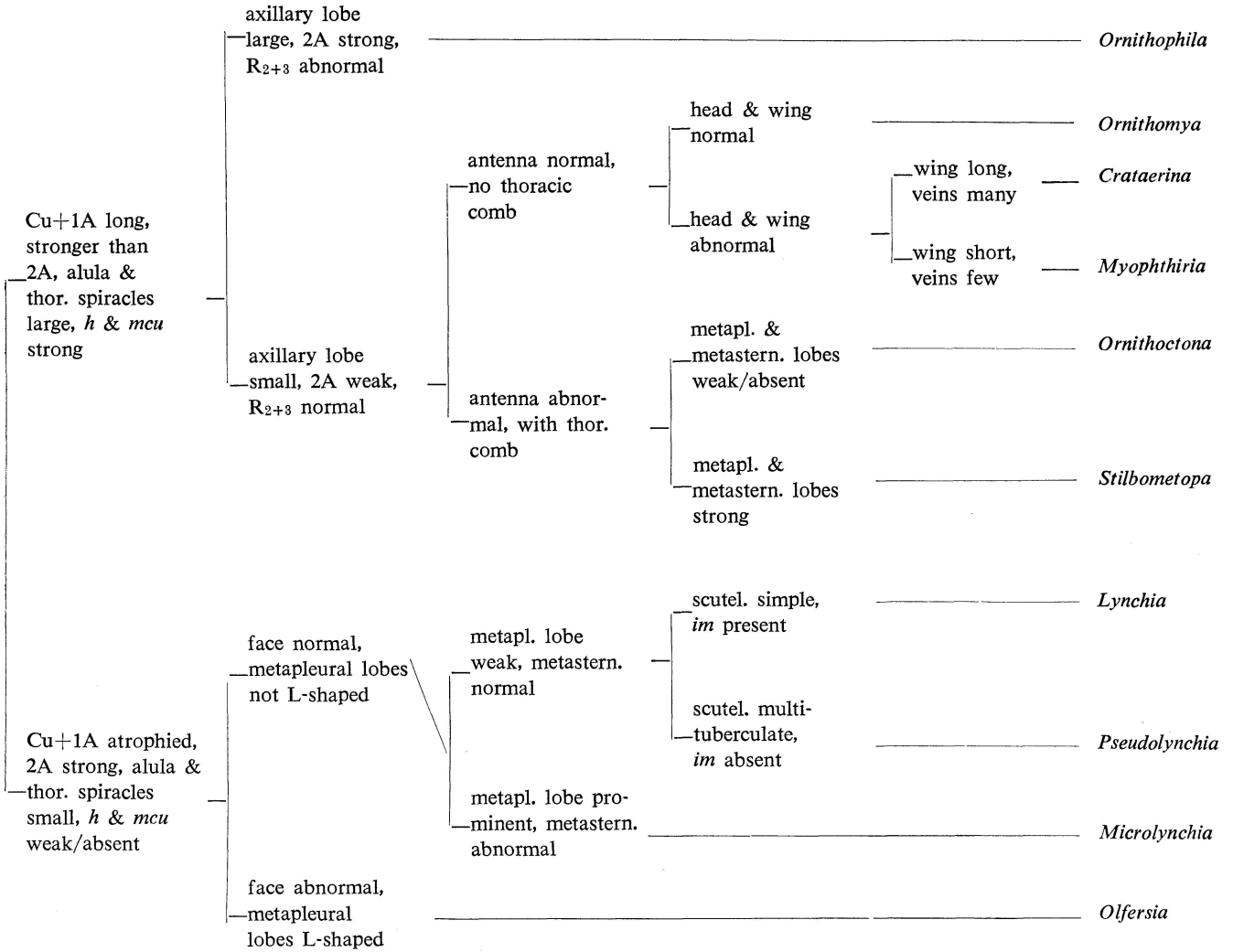
Genus **Ornithophila** Rndn. 1879 (type: *vagans* Rndn.)

Ornitheza Speis. 1902 (type: *gestroi* Rndn.). **New Synonymy.**

Distribution: Old World tropics and subtropics, with stray records from the Far North.

Host preference: Polyxenous in one species and probably oligoxenous in another.

Systematics: Containing 2 closely related species. No recent revision. The status of *strigis* Scop. 1772 and *capensis* Wk. 1849 is not quite certain. But once the possible syn-



Graph 2. Probable interrelationship of ornithomyine genera.

onymy indicated below is confirmed, they would replace respectively, the long-used names *gestroi* Rndn. 1878 and *metallica* Schin. 1864. As a result of the misleading generic key, figure and description (" areola axillare nulla, inde venis duabus tantum transversis") by

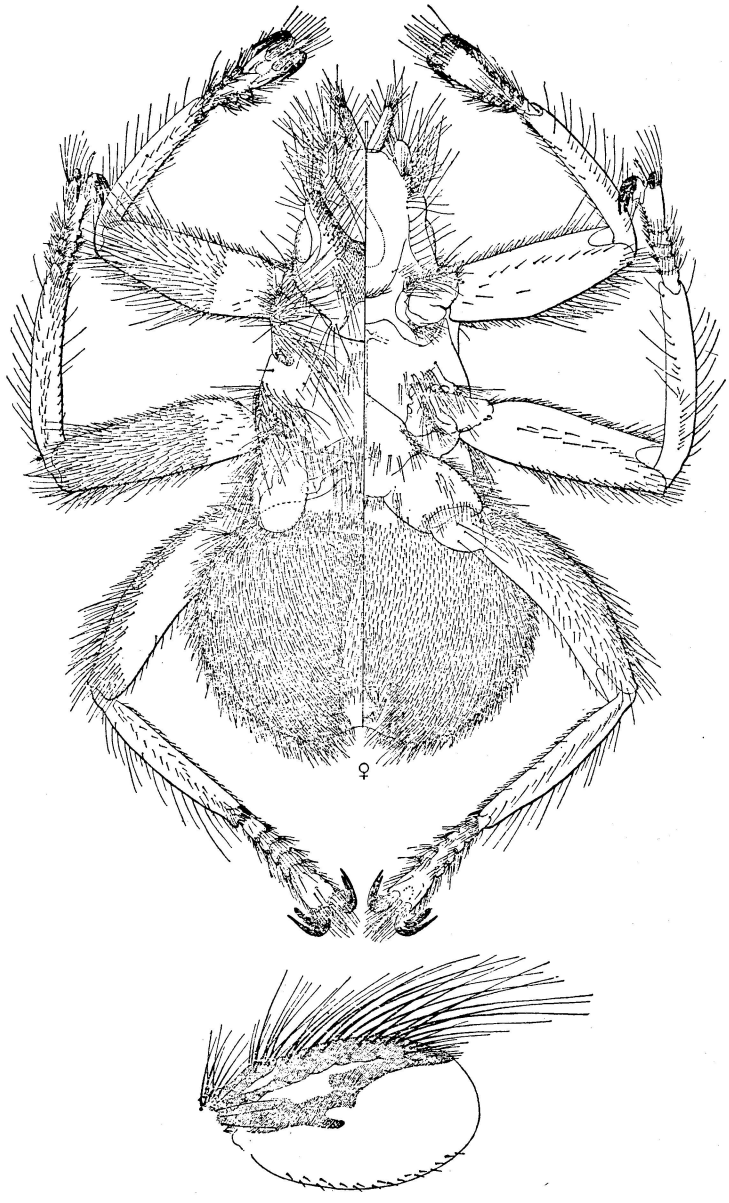


Fig. 2. *Myophthiria fimbriata* (Waterh.), ♀, with left and right halves of the figure representing dorsal and ventral aspects respectively and with wing more enlarged and placed at the bottom. (After Ferris 1928 Pan-Pacif. Ent. **4**: 141).

Rondani (*l. c.*), *Ornithophila* has long been misinterpreted and wrongly degraded as a subgenus or synonym of *Lynchia* sen. Beq. An examination of the unique ♂ type of *vagans*, the type-species, revealed that Rondani himself was misled by the poor condition of this specimen and that *vagans* and *metallica* are definitely synonymous. Consequently the familiar name *Ornitheza* has to be dropped in favor of *Ornithophila*.

The genus was placed by Speiser (1908c) and Bequaert (1954) (*cf.* Table 1) between *Ornithomya* and *Ornithoctona*, probably on the ground that its R-branches are running so close to the costal margin that the apical 3/5 of R_{2+3} is confluent with the costa and that the ♀ abdominal tergal plates are not or hardly developed. But the enlarged axillary lobes and the distinct 2A are unique for the family. The eyes are comparatively smaller, the antennae shorter and the lower calypteres much less developed than in those 2 genera. On the other hand, the crowding of the R-branches toward C is a common feature throughout the Ornithoicinae and Ornithomyinae. In the former subfamily, the R_{2+3} is short and slender and the apical portion of R_{4+5}, practically in contact with C. In Hippoboscinae and other higher subfamilies, the R_{2+3} is shortened or entirely coalescent with R_{4+5}. Therefore the thickening of R_{2+3} as well as its apical coalescence with C in *Ornithophila* probably represent the first step of these changes from the *Ornithoica*-like ancestral stock. The reduction of the ♀ abdominal plates appears and disappears several times within the family, and even within the genera *Lynchia* sen. Beq. and *Hippobosca*. It is apparently an adaptation to the "pupiparous" life and cannot be the sole basis to claim for the relative antiquity of *Ornithomya* over *Ornithophila*. By interweaving these evidences and suppositions, the latter genus is here placed at the beginning of the subfamily.

11. Ornithophila gestroi (Rndn.) 1878, n. comb.

(?)†*Hippobosca strigis* Scopoli 1772 (no locality; *restricte*: Czechoslovakia).
**Ornithomyia gestroi* Rndn. 1878 (Tunis).

DISTRIBUTION: Mediterranean Subregion, sporadic.

HOST PREFERENCE: Probably oligoxenous, only recorded from *Falco* (Falconidae, Falconiformes).

12. Ornithophila metallica (Schin.) 1864, n. comb.

(?)†*Ornithobia capensis* Wk. 1849 (Natal).
**Ornithomyia metallica* Schin. 1864 (Austria).
**Ornithomyia andajensis* Rndn. 1878 (W. New Guinea).
Ornithophila vagans* Rndn. 1879 (N. Italy). **New Synonymy.
**Olfersia noumeana* Bigot 1885 (New Caledonia).
**Ornithomyia aenescens* Bigot 1885 (New Caledonia).
**Ornithomyia butalis* Coq. 1899 (Bering Strait).
Ornitheza pallipes* Speis. 1904 (Sicily, Greece). **New Synonymy.
†*Ornitheza odontoscelis* Speis. 1904 (Jugoslavia). **New Synonymy.**
[*Ornitheza submetallica* (Schin. *in litt.*) Speis. 1904]. nom. nud.

DISTRIBUTION: Old World tropics and subtropics, with one stray record from the Bering Strait.

HOST PREFERENCE: Polyxenous; recorded from about 50 genera in Passeri-, Coracii-, Pici-, Falconi-, Psittaci-, Galli-, Cuculi-, Ciconii-, Columbi-, Strigi-, Apodi-, Colii- and Trogoniformes; probably only the first 3 of these orders are normal hosts.

Genus **Ornithomya** Latr. 1802 (type: *avicularia* Linn.)

Pseudornithomyia Lutz 1915 (type: *ambigua* Lutz).

Distribution: World-wide, commoner in temperate than tropical countries. The *biloba*-group is confined to the Old World, whereas the *ambigua*-group, the Neotropics.

Host preference: Polyxenous in species of the *avicularia*-group; mono- or oligoxenous and probably confined to Hirundinidae (Passeriformes) in those of the 2 other groups.

Systematics: Bequaert (1954) partially revised the genus and recognized 2 subgenera, and Hill (1962) revised the British species. Apparently it is more natural to split the genus into 3 species-groups. Ten species are here provisionally listed as distinct, but the *biloba*-group needs revision and the true status of *O. chloropus* Bergr. is to be more intensively investigated.

Key to species-groups of Ornithomya

1. Wing-setulae uniformly covering nearly apical 2/3 of dorsal surface; postorbit (measured behind middle of eye) not shorter than greatest width of inner orbit; eye small, not longer than greatest interocular distance; ocelli small or absent. Mono- or oligoxenous on Hirundinidae 2

   Wing-setulae covering only apical 1/2 of dorsal surface and not uniform in distribution, cells *3r* and *1m* with bare strips; postorbit (measured at middle of eye) distinctly shorter than greatest width of inner orbit; eye larger, not shorter than greatest interocular distance; ocelli large, conspicuous; abdomen with 3 median tergal plates in both sexes; scutellar bristles arranged regularly in a transverse series. Polyxenous ..... **avicularia**-group

2. Abdomen with 3 median tergal plates in both sexes (small in ♀); scutellar bristles scattered over the surface; prosternal lobes relatively short and apically more rounded. Old World ..... **biloba**-group

   Abdomen with 1 (♂) or no (♀) median tergal plate; scutellar bristles arranged in a transverse series near hind margin; prosternal lobes relatively long and apically pointed. Neotropics ..... **ambigua**-group

(i) **avicularia**-group (*Ornithomya*, s. s.)

13. Ornithomya avicularia (Linn.) 1758.

†*Hippobosca avicularia* Linn. 1758 (no locality; *restricte*: Sweden).
†*Hippobosca corvi* Scopoli 1763 (Austria).
†*Ornithomyia viridis* Latr. 1805, n. name for *avicularia* Linn.
**Ornithomyia viridula* Meig. 1830 (Europe).
**Ornithomyia nigricornis* Erichs. 1842 (Tasmania).
**Ornithomyia opposita* Wk. 1849 (New Zealand).
**Ornithomyia tasmanensis* Mcq. 1851 (pt., excl. 2 of the paratypes) (Tasmania).

Hippobosca oculata Motsch. 1860 (E. Siberia).
Ornithomyia aobatonis Matsum. 1905 (Japan).
Ornithoica diomedeae Kishida 1932 (Japan).
Ornithoica nipponensis Kish. 1932 (Japan).
Ornithoica kibitaki Kish. 1932 (Japan).

DISTRIBUTION: Palaearctic Region, widely spread; found sparingly in montane areas of Palaeotropics; introduced and now established in the New Zealand and Australotasmanian Subregions.

HOST PREFERENCE: Polyxenous; recorded from about 70 genera in Passeri-, Falconi-, Psittaci-, Charadrii-, Strigi-, Galli-, Ciconii-, Grui-, Columbi-, Cuculi-, Caprimulgi-, Trogoni- and Piciformes. Probably the first 5 orders serve as normal hosts. Some of the records have been confused with related species and need verification.

14. Ornithomya chloropus Bergr. 1901.

†*Ornithomyia chloropus* Bergr. 1901 (S. Finland).
Ornithomyia lagopodis* Sharp 1907 (Scotland). **New Synonymy.

DISTRIBUTION: Little known, probably throughout northern part of the Holarctic Region.

HOST PREFERENCE: Not quite clear as a sequence of the confusion with *O. fringillina* Curt. Probably polyxenous and preferring Galli- and Passeriformes.

15. Ornithomya fringillina Curt. 1836.

†*Ornithomyia pallida* Say 1823 ("USA"; *restricte*: Nebraska). nom. praeocc.
Ornithomyia fringillina Curt. 1836 (S. England).
**Ornithomyia variegata* Bigot 1885 (New Zealand).
†*Ornithomyia anchineuria* Speis. 1905, n. name for *pallida* Say.

DISTRIBUTION: Holarctic Region, widely spread but rarely taken south of 36° N. Lat.; introduced and now established in the New Zealand and Australotasmanian Subregions.

HOST PREFERENCE: Polyxenous; Bequaert (1954) listed, as its recorded hosts, nearly 130 genera (80 of which were from N. America) in Passeri-, Galli-, Falconi-, Charadrii-, Strigi-, Pici-, Ciconii-, Grui-, Cuculi- and Coraciiformes. Some of these records have been confused with that of *O. chloropus* Bergr. Probably the first 3 of these 10 orders serve as normal hosts, and the Passeriformes (Muscicapidae and Fringillidae in particular) are most preferred. Hill (1962) believed that in the British Isles, the species is generally restricted to smaller Passeriformes, particularly Sylviinae.

16. Ornithomya fuscipennis Bigot 1885.

**Ornithomyia fuscipennis* Bigot 1885 ("Colombia"; *recte*: Australia).
**Ornithomyia perfuga* Speis. 1902 (N. S. Wales).

DISTRIBUTION: Australotasmanian Subregion; Oriental Region.

HOST PREFERENCE: Polyxenous; recorded from about 10 genera in Coracii-, Strigi-, Falconi-, Psittaci-, Caprimulgi-, Columbi- and Passeriformes, of which the first 2 orders are probably most preferred.

17. Ornithomya parva Mcq. 1843.

**Ornithomyia parva* Mcq. 1843 ("Brazil or Chile"; *restricte*: Chile).
**Ornithomyia remota* Wk. 1849 (Tristan da Cunha in S. Atlantic).
(?)†*Ornithomyia synallaxidis* Lynch 1881 (Argentina).
Ornithomyia chilensis E. C. Reed 1904 (Chile). nom. praeocc.
Ornithomyia paricella Speis. 1905, n. name for *chilensis* E. C. Reed.

DISTRIBUTION: Temperate S. America (Tristan da Cunha, Gough I., Patagonia, S. Chile).

HOST PREFERENCE: Polyxenous; recorded from 17 genera in Passeri-, Grui-, Falconi-, Strigi- and Piciformes, most probably the first of these 5 orders is preferred.

(ii) **ambigua**-group (*Pseudornithomyia*)

18. Ornithomya ambigua (Lutz) 1915.

Pseudornithomyia ambigua Lutz 1915 (Brazil).

DISTRIBUTION: Brazilian Subregion (Colombia, Venezuela, Brazil), spreading to Peru.

HOST PREFERENCE: Oligoxenous; on 4 genera of Hirundinidae (Passeriformes); with stray records from Furnariidae (Passeriformes) and Columbidae (Columbiformes).

19. Ornithomya hoffmannae Beq. 1954.

**Ornithomyia* (*Pseudornithomyia*) *hoffmannae* Beq. 1954 (Mexico).

DISTRIBUTION: Mexican Subregion (Mexico).

HOST PREFERENCE: Hardly known, probably oligoxenous; only recorded from *Buteo* (Accipitridae, Falconiformes), but this might be either accidental or due to contamination.

(iii) **biloba**-group

20. Ornithomya biloba Duf. 1827.

†*Ornithomyia pallida* Olf. 1816 (Germany). nom. praeocc. **New Synonymy.**
†*Ornithomyia biloba* Duf. 1827 (France).
Ornithomyia tasmanensis* Mcq. 1851 (pt., 2 of the paratypes only) (Tasmania). **New Synonymy.
**Ornithomyia ptenoletis* Loew 1857 (Germany).
**Ornithomyia tenella* Schin. 1864 (Austria).
Ornithomyia transfuga* Séguy 1938 (Hopei in N. China). **New Synonymy.

DISTRIBUTION: Palaearctic Region, widely spread; introduced and now established in the Australotasmanian Subregion.

HOST PREFERENCE: Monoxenous; on *Hirundo* (Hirundinidae, Passeriformes); also stray records on *Delichon* and *Riparia* of the same family and on *Apus* (Apodiformes) and *Bubo* (Strigiformes).

21. Ornithomya comosa Austen 1930.

**Ornithomyia comosa* Austen 1930 (Bihar).

DISTRIBUTION: Indian Subregion (Bihar).

HOST PREFERENCE: Oligoxenous; known from 2 genera of Hirundinidae.

22. Ornithomya fur Schin. 1868.

**Ornithomyia fur* Schin. 1868 (Cape of Good Hope).
Ornithomyia inocellata* Ferr. 1930 (Pretoria). **New Synonymy.
Ornithomyia roubaudi* Séguy 1938 (Fr. Congo). **New Synonymy.

DISTRIBUTION: W. and S. African Subregion.

HOST PREFERENCE: Oligoxenous; known from 4 genera of Hirundinidae.

Genus **Crataerina** Olf. 1816 (type: *lonchoptera* Olf.)

Stenepteryx Lch. 1817 (type: *hirundinis* Linn.). **New Synonymy.**
Oxypterum Lch. 1817 (type: *kirbyanum* Lch.).
Anapera Meig. 1830, n. name for *Oxypterum* Lch.
Chelidomyia Rndn. 1879 (type: *hirundinis* Linn.).

Distribution: Chiefly Old World, only one of the species found in the Neotropics.

Host preference: Restricted to Apodidae (Apodiformes) and Hirundinidae (Passeriformes). All species are either mono- or oligoxenous.

Systematics: Austen (1926) and Gil Collado (1932) partially revised the genus and offered partial keys to species. The 6 species listed below are allottable to 3 groups. *Stenepteryx*, generally considered to be a distinct genus, is here suppressed as a synonym rather than degraded to subgenus, so as to save a new subgeneric name for the *seguyi*-group. It is quite queer that Speiser (1908) should have placed *Ornitheza*, *Ornithopertha* and "*Ornithophila*" [=*Lynchia* sen. Beq.] between his *Stenepteryx* and *Crataerina* (*cf.* Table 1). Apparently the phylogenetic significance of the presence and absence of ocelli has been over-emphasized.

Crataerina apparently represents a highly specialized form of the polyxenous, widely distributed genus *Ornithomya*, and its "stream-lined" head and degenerated eyes and wings, an adaptation to the oligoxenous life and particular environments. It is inseparable from *Myophthiria* (see Ferris 1925b: 336, 1930b: 547–549) except in the wing-shape and venation which however vary intra- and interspecifically. The retention of the latter name in the present list as for an independent taxon is nothing but a matter of tradition.

KEY TO SPECIES-GROUPS OF CRATAERINA

1. Wing ribbon-like, about 7.5 (♂) or 6.5 (♀) × as long as wide, widest at a point much basad to level of apex of Cu+1A (anal vein); ocelli present, or represented by 3 small shallow pits; ♀ abdomen with a cluster of exceeding strong spiniform bristles at each side near apex. Palaearctic.....**hirundinis**-group
   Wing somewhat triangular or rectangular, not ribbon-like, 2.2–3.7× as long as wide, widest at level of apex of Cu+1A; ocelli always absent, occasionally represented by a single shallow pit; ♀ abdomen without bristle-clusters described above.....2
2. Wing setulose at apical area; vein M_{3+4} much closer to M_{1+2} than to Cu+1A; apex of vein R_1 nearly equidistant to apex of R_{4+5} and to wing-base; abdomen with 1 (♂) or no (♀) median tergal plate. Neotropic.....**seguyi**-group

Wing not setulose at all; vein M_{3+4} practically equidistant to M_{1+2} and to Cu+1A; apex of vein R_1 much closer to apex of R_{4+5} than to wing-base; abdomen in both sexes usually with 3 median tergal plates. Palaearctic, Ethiopian and Oriental..... **pallida**-group

(i) **hirundinis**-group (*Stenepteryx*)

23. Crataerina hirundinis (Linn.) 1758.

†*Hippobosca hirundinis* Linn. 1758 (no locality; *restricte*; Sweden).
†*Ornithomyia stenoptera* Olf. 1816 (Germany).
**Chelidomyia cypseli* Rndn. 1879 (Italy).
Lynchia nipponica Kishida 1932 (Japan).

DISTRIBUTION: Palaearctic Region, widely spread.

HOST PREFERENCE: Oligoxenous; preferring *Delichon urbica*, often on *Riparia* and *Hirundo* (all of Hirundinidae); stray records on *Apus* (Apodidae).

(ii) **pallida**-group (*Crataerina*, s. s.)

24. *Crataerina acutipennis Austen 1926 (S. Africa, Canary Is., Madeira Is.).

DISTRIBUTION: S. African Subregion, spreading (? seasonal records) to the Canary and Madeira Is.

HOST PREFERENCE: Monoxenous; on *Apus* (Apodidae).

25. Crataerina melbae (Rndn.) 1879.

**Chelidomyia melbae* Rndn. 1879 (Italy).
Crataerina longipennis* Austen 1926 (Burma). **New Synonymy.
Crataerina propinqua* Austen 1926 (Syria). **New Synonymy.
Crataerina melbae var. *anomala* Gil Collado 1933 (Spain). **New Synonymy.**

DISTRIBUTION: Mediterranean Subregion, spreading eastward (? seasonal record) to Burma.

HOST PREFERENCE: Monoxenous; on *Apus* (Apodidae).

26. *Crataerina obtusipennis Austen 1926 ("Mongolia; Penang"; *restricte*: Penang).

DISTRIBUTION: Malaysian Subregion (Penang).

HOST PREFERENCE: Unknown; possibly monoxenous and on *Apus* (Apodidae).

27. Crataerina pallida (Latr.) 1812.

†*Ornithomyia pallida* Latr. 1812 (Europe).
†*Crataerina lonchoptera* Olf. 1816 (no locality; *restricte*: Germany).
**Oxypterum kirbyanum* Lch. 1817 (England).
**Anapera tangerii* Guér. 1835 (Morocco).
Anapera sibiriana Gimm. 1847 (E. Siberia). **New Synonymy.**
Stenepteryx hirundinis var. *nigriventris* Strobl 1906 (Spain). **New Synonymy.**
[*Oxypterum acuminatum* (Kirby *in litt.*) Maa 1962 (no locality)]. nom. nud.

DISTRIBUTION: Palaearctic Region, widely spread.

HOST PREFERENCE: Monoxenous; on *Apus* (Apodidae); with stray records on Fal-

coniformes (*Buteo*) and Passeriformes (*Hirundo*, *Passer*, *Sturnus*).

(iii) **seguyi**-group

28 ***Crataerina seguyi** Falc. 1929 (Peru).

DISTRIBUTION: Brazilian Subregion, spreading to northern part of Chilean Subregion.

HOST PREFERENCE: Oligoxenous; on *Alopochelidon* and *Notiochelidon* (Hirundinidae).

Genus **Myophthiria** Rndn. 1875 (type: *reduvioides* Rndn.)

Myiocoryza Rndn. 1878 (type: *lygaeoides* Rndn.).
Brachypteromyia Wllst. 1896 (type: *femorata* Wllst.).

Distribution: Oriental Region and New World; most of the species are widely spread as a result of the seasonal migration of their hosts.

Host preference: Confined to Apodiformes (Apodidae), with stray records on Passeriformes (Hirundinidae). All species are either mono- or oligoxenous.

Systematics: The 5 species listed below fall into 2 geographic rather than morphologic groups which were recognized by some authors as subgenera or even genera. Bequaert (1954) revised the *fimbriata*-group. Earlier determinations of the Ceylon, New Guinea, N. Queensland and Fiji forms as *reduvioides* are to be verified.

KEY TO SPECIES-GROUPS OF MYOPHTHIRIA

Scutellum shorter and wider in proportion, with very numerous bristles; legs robust, femora 2× or more as wide as median length of scutellum; body more hirsute. New World ..... **fimbriata**-group
Scutellum longer and narrower in proportion, with only about 10 bristles and some shorter setae; legs slender, femora hardly wider than median length of scutellum; body less hirsute. Oriental ..... **reduvioides**-group

(i) **reduvioides**-group (*Myophthiria*, s. s.)

29. Myophthiria capsoides Rndn. 1878.

**Myiophthiria capsoides* Rndn. 1878 (Philippine Is.).
Brachypteromyia nakamurai Kishida 1932 ("Japan"; *recte*: Philippine Is.). **New Synonymy.**

DISTRIBUTION: Philippine Subregion.

HOST PREFERENCE: Monoxenous; on *Collocalia* (Apodidae). Wrongly recorded from *Hirundo* (Passeriformes).

30. Myophthiria lygaeoides Rndn. 1878.

**Myiophthiria lygaeoides* Rndn. 1878 (Amboina).

DISTRIBUTION: Wallacea Subregion (Amboina).

HOST PREFERENCE: Monoxenous; on *Collocalia* (Apodidae).

31. ***Myophthiria reduvioides** Rndn. 1875 (Borneo).

DISTRIBUTION: Malaysian Subregion.

HOST PREFERENCE: Monoxenous; on *Collocalia* (Apodidae).

(ii) **fimbriata**-group (*Brachypteromyia*)

32. Myophthiria fimbriata (Waterh.) 1887.

**Anapera fimbriata* Waterh. 1887 (New Mexico).
†*Brachypteromyia femorata* Wllst. 1896 (Wyoming).

DISTRIBUTION: Rocky Mts. Subregion.

HOST PREFERENCE: Oligoxenous; on *Aeronautes* and *Nephoecetes* (Apodidae); with stray records on *Tachycineta* (Hirundinidae).

33. Myophthiria neotropica (Beq.) 1943.

**Brachypteromyia neotropica* Beq. 1943 (Venezuela).

DISTRIBUTION: Brazilian Subregion (Venezuela).

HOST PREFERENCE: Monoxenous; on *Aeronautes* (Apodidae).

Genus **Ornithoctona** Speis. 1902 (type: *erythrocephala* Lch.)

Ornithopertha Speis. 1904 (type: *nitens* Bigot).

Distribution: Pantropic, with stray records from temperate countries. One of the 3 species-groups is restricted to the Neotropics and many of the species are widely spread.

Host preference: Most of the species show little host specificity and are either pleio- or polyxenous but *nitens* is oligoxenous.

Systematics: Containing 9 species which are here allotted to 3 groups. *Ornithopertha*, represented by *nitens* Bigot, was recognized by Speiser (1908) and several other authors as an independent genus, and by Bequaert (1954) as one of the 2 subgenera of *Ornithoctona*. As shown in the following key, it stands intermediate of the 2 groups included by those authors under *Ornithoctona* s. s. It is therefore suppressed so as to save a new subgeneric name for the *australasiae*-group. The New World forms of the genus were recently revised by Bequaert (*l. c.*).

KEY TO SPECIES-GROUPS OF ORNITHOCTONA

1. Wing entirely bare, at most with a very narrow setulose line on costal margin near apex; prosternal processes wide, not or hardly longer than wide at base; ♀ abdomen without median tergal plates; size large, wing 7–10 mm (♂) or 8–11 mm (♀) long. Pantropic ..... **plicata**-group
   Wing extensively setulose, at least at apical part of cell *3r*; prosternal processes narrow, and except in *nitens*, distinctly longer than wide at base 2
2. Wing setulose only at apex of cell *3r*, bare at *1m*; smallest width of mediovertex not more than 1/2 width of eye in front view of head; postorbit much shorter than average width of inner orbit; antenna more or less spoon-shaped, apically blunt or subtruncate; ♀ abdomen without median tergal plates; body-size large, wing 10–12.5 mm long. Neotropic ..... **nitens**-group
   Wing setulose at both cells *3r* and *1m*; smallest width of mediovertex much more

than 1/2 width of eye in front view of head; postorbit hardly shorter than average width of inner orbit; antenna strongly tapering apicad, apically acuminate; ♀ abdomen with 3 small median tergal plates; body-size smaller. Pantropic..... ..... **australasiae**-group

(i) **australasiae**-group

34. Ornithoctona australasiae (Fabr.) 1805.

†*Hippobosca australasiae* Fabr. 1805 ("Pacific Ocean"; *restricte*: Java).
Ornithomyia obscurata* Wk. 1861 (pt., lectotype only) (Tondano nr. Celebes). **New Synonymy.
Ornithomyia javana Jaenn. 1867 (Java).

DISTRIBUTION: Malaysian, Wallacea and Papuan Subregions.

HOST PREFERENCE: Little known, probably polyxenous; recorded from 5 genera in Passeri-, Columbi-, Coracii- and Falconiformes, apparently the first 2 orders are preferred.

35. Ornithoctona fusciventris (Wdm.) 1830.

**Ornithomyia fusciventris* Wdm. 1830 (Kentucky).
†*Ornithomyia chilensis* Guér. 1835 (Chile).
(?)†*Ornithomyia fusca* Guér. 1838 (no locality).
†*Ornithomyia chilensis* Mcq. 1843 (Chile). nom. praeocc.
**Ornithomyia testacea* Mcq. 1845 (Colombia).
**Ornithomyia varipes* Wk. 1849 (Colombia).
**Ornithomyia pilosula* Wulp 1903 (Costa Rica).
Ornithomyia pirangae Swenk 1916 (Costa Rica).
**Ornithomyia strigilecula* Ferr. 1923 (Peru).

DISTRIBUTION: New World, widely spread; introduced and now established in Hawaiian Is.

HOST PREFERENCE: Pleioxenous; recorded from about 60 genera in Passeri-, Galli-, Falconi-, Trogoni-, Pici- and Coraciiformes, probably only the first order is preferred.

36. Ornithoctona laticornis (Mcq.) 1835.

**Ornithomyia laticornis* Mcq. 1835 ("Cuba or Cape of Good Hope"; *restricte*: Cape of Good Hope).
**Ornithomyia platycera* Mcq. 1843 ("Africa"; *restricte*: C. Africa).
**Ornithoctona idonea* Falc. 1929 (Madagascar, Africa).

DISTRIBUTION: Ethiopian and (?) Malagasy Regions, widely spread.

HOST PREFERENCE: Probably pleioxenous; recorded from about 40 genera in Passeri-, Ciconii-, Anseri-, Columbi-, Trogoni-, Coracii- and Piciformes, most probably breeding only on the Passeriformes and the other orders merely representing stray records.

37. Ornithoctona oxycera Falc. 1929 (Colombia).

DISTRIBUTION: Brazilian Subregion (Colombia, Venezuela).

HOST PREFERENCE: Little known; recorded from 5 genera in Passeri- and 1 in

Falconiformes, apparently the first order serves as true normal hosts. Falconiformes.

38. *__Ornithoctona soror__ Ferr. 1926 (Sarawak).

DISTRIBUTION: Malaysian Subregion (Borneo).

HOST PREFERENCE: Hardly known, only recorded on *Dicrurus* (Dicruridae, Passeriformes).

(ii) **nitens**-group (*Ornithopertha*)

39. Ornithoctona nitens (Bigot) 1885.

**Ornithomyia nitens* Bigot 1885 (excl. one of the syntypes) (Panama).
**Ornithomyia geniculata* Bigot 1892 (Costa Rica).
**Ornithopertha anthracina* Speis. 1904 (Honduras).

DISTRIBUTION: Mexican and Brazilian Subregions.

HOST PREFERENCE: Oligoxenous; known from 2 genera of Trogonidae (Trogoniformes), with stray records on 4 genera in Columbi-, Apodi- and Passeriformes.

40. Ornithoctona orizabae Beq. 1954.

**Ornithoctona (Ornithoctona) orizabae* Beq. 1954 (Mexico).

DISTRIBUTION: Mexican Subregion (Mexico).

HOST PREFERENCE: Unknown.

(iii) **plicata**-group (*Ornithoctona* s. s.)

41. Ornithoctona erythrocephala (Lch.) 1817.

**Ornithomyia erythrocephala* Lch. 1817 (Brazil).
†*Ornithomyia nebulosa* Say 1823 ("USA"; *restricte*: E. Nebraska).
**Olfersia mexicana* Mcq. 1843 (pt. of paratypes only) (Mexico).
**Ornithomyia gemina* C. G. Thms. 1869 (Peru).
**Ornithomyia bellardiana* Rndn. 1878 (Mexico).
**Ornithomyia nitens* Bigot 1885 (pt., only one of the syntypes) (Panama).
**Ornithomyia haitiensis* Bigot 1885 (Haiti).
**Ornithomyia robusta* Wulp 1903 (Mexico, Panama).
**Ornithomyia pyrrhocephala* Speis. 1904 (Mexico).
Ornithomyia buteonis Swenk 1916 (Nebraska).
Ornithomyia costaricensis Swenk 1916 (Costa Rica).
**Ornithoctona albiventris* Bau 1922 (Cuba).

DISTRIBUTION: New World, widely spread.

HOST PREFERENCE: Polyxenous; recorded from 75 genera in Falconi-, Columbi-, Ciconii-, Passeri-, Caprimulgi-, Strigi-, Galli-, Psittaci-, Cuculi-, Trogoni-, Coracii-, Pici-, Grui- and Anseriformes. Probably only first 3 or 4 of these 14 orders serve as normal hosts for breeding.

42. Ornithoctona plicata (Olf.) 1816.

**Ornithomyia plicata* Olf. 1816 (Mauritius).
**Ornithomyia nigricans* Lch. 1817 (Bengal).

**Ornithomyia columbae* Wdm. 1824 (Java).
**Hyppobosca* (sic) *australis* Guér. 1831 (N. S. Wales).
†*Hippobosca sitiens* Bdv. 1835 (Fiji Is.).
**Ornithomyia asiatica* Mcq. 1851 ("Asia"; *restricte*: Luzon).
**Hippobosca viridipes* Wk. 1858 (N. S. Wales).
†*Ornithomyia doreica* Wk. 1861 (NW New Guinea).
**Ornithomyia batchianica* Wk. 1861 (Batchian).
**Ornithomyia hatamensis* Rndn. 1878 (NW New Guinea).
**Ornithomyia batchiana* Rndn. 1878 (N. S. Wales, Philippine Is.).
**Ornithomyia hova* Bigot 1885 (Madagascar).
**Ornithomyia kanakorum* Bigot 1885 (New Caledonia).
**Ornithoctona vitrina* Speis. 1904 (Tonga Is.).
†*Ornithoctona melaena* Speis. 1904 (Sumatra).
**Ornithoctona magna* Ferr. 1926 (Sarawak).
Ornithomyia tropica Kishida 1932 (Taiwan, Philippine Is.).
Ornithoica annalis Kish. 1932 ("Japan").

DISTRIBUTION: Palaeotropics except continental Africa; with stray records from neighboring temperate countries.

HOST PREFERENCE: Polyxenous; recorded from about 40 genera in Columbi-, Passeri-, Falconi-, Psittaci-, Cuculi-, Coracii-, Pici-, Galli-, Strigi-, Charadrii-, Ciconii- and Trogoniformes. Probably only the first 2 or 3 of these 12 orders are preferred. It is interesting that the host ranges and preference of this and the preceding species are similar and that both are widely distributed, one in the Old, and another in the New World.

42a. ***Ornithoctona rugicornis** Maa 1963 (S. Thomé I.).

DISTRIBUTION: W. African Subregion (S. Thomé I.).

HOST PREFERENCE: Hardly known, only recorded from *Agapornis* (Psittaciformes, Psittacidae) and *Onychognathus* (Sturnidae, Passeriformes).

Genus **Stilbometopa** Coq. 1899 (type: *fulvifrons* Wk.)

Lynchia Weyenb. 1881 (type: *penelopes* Weyenb.), not of Beq. 1926.

Distribution: New World tropics and subtropics. Most of the species are localized.

Host preference: Not well known. Most of the species appear to be polyxenous.

Systematics: Containing 5 closeley related species. The genus was recently revised by Bequaert (1955). It is clearly more advanced than and most closely related to *Ornithoctona* (*cf.* Graph 2) notwithstanding in Speiser's (1908) system, it was placed far apart from the latter genus. For nomenclature, *cf.* discussions under *Lynchia* (p. 111).

43. Stilbometopa fulvifrons (Wk.) 1849.

**Ornithomyia fulvifrons* Wk. 1849 (Jamaica).

DISTRIBUTION: Antillean Subregion, with stray records from the USA and Costa Rica.

HOST PREFERENCE: Polyxenous; recorded from 8 genera in Columbi-, Passeri-, Galli- and Cuculiformes. Apparently the first 1 or 2 of these orders are preferred.

44. Stilbometopa impressa (Bigot) 1885.

**Olfersia impressa* Bigot 1885 (California).

DISTRIBUTION: Californian and Rocky Mts. Subregions, sporadic.

HOST PREFERENCE: Oligoxenous; known from 4 genera in Phasianidae (Galliformes), with stray record from Accipitridae (Falconiformes).

45. *Stilbometopa legtersi Beq. 1955 (Mexico, Brazil).

DISTRIBUTION: Rocky Mts. and Brazilian Subregions, sporadic.

HOST PREFERENCE: Little known, possibly oligoxenous; recorded only from *Ortalis* (Cracidae, Galliformes).

46. Stilbometopa podopostyla Speis. 1904.

**Stilbometopa podopostyla* Speis. 1904 (pt., excl. paratype from Mato Grosso) (Brazil; *restricte*: Rio Grande do Sul in S. Brazil).

Stilbometopa columbarum Lutz 1915 (Brazil).

DISTRIBUTION: Continental Neotropical Region, widely spread, also stray (?summer) records from the southern USA.

HOST PREFERENCE: Polyxenous; known from 5 genera each in Columbidae (Columbiformes) and Tinamidae (Tinamiformes), with 1 stray record on Passeriformes.

Note: *S. podopostyla* and *S. fulvifrons* are rather doubtfully distinct (see Ferris 1930: 64; Bequaert 1953a: 329).

47. *Stilbometopa ramphastonis Ferr. 1930 (Panama).

(?)†*Lynchia penelopes* Weyenb. 1881 (Argentina).

DISTRIBUTION: Neotropical Region, widely spread.

HOST PREFERENCE: Uncertain; recorded from 1 genus each in Columbi-, Passeri-, Galli-, Trogoni- and Piciformes. Probably the last 3 orders represent stray records.

Genus **Lynchia** Weyenb. 1881 (sen. Beq. 1926)
(type: *penelopes* Weyenb. sen. Beq.)

Olfersia Say 1823 (type: *albipennis* Say).
Icosta Speis. 1905 (type: *dioxyrhina* Speis.)
Ornithoponus Aldr. 1923 (type: *americana* Lch.)

Distribution: World-wide; one of the species almost cosmopolitan (?) but most of them rather localized.

Host preference: Not or hardly known in many species; for those with more complete host data, some appear to be oligoxenous and others, pleio- or polyxenous.

Systematics: This is the largest genus of the family and contains nearly 30 fossil and Recent species already described. Bequaert (1955) revised all New World forms and also (1933b, 1945b) the "larger" species (wing 6–8.5 mm long) of the World but did not attempt to segregate them into natural groups. It is here provisionally divided into 11 species-groups, not including the fossil species *rottensis* Statz and the dubious ones *acromialis* Speis., *parallelifrons* Speis. and *penelopes* Weyenb. Obviously some of the groups are justi-

fiably rated as subgenera when we know more about this genus. Ingeneral, the New World forms are more uniform in structure than those of the other Hemisphere. They are allottable to only 3 groups and one of them is common to the Old World. Of the other 8 groups, 5 are at present found only in the Oriental Region; 2, Ethiopian; and 1, probably common to both Regions.

The interpretation of the name *Lynchia* is confronted with difficulties: the original description is not quite adequate as its author relied on literature rather than actual specimens to compare his new genus with related forms; the type specimens of the haplotype *penelopes* are lost and have never been re-examined by any subsequent workers. While it is evident that Speiser (1902: 155) and others have wrongly interpreted the name, there seems to be some serious doubt whether Bequaert (1926b: 259–271, 1955: 260–272) has correctly done so. I am quite unwilling and have no intention to argue with that eminent Dipterist and to upset the current usage of the name *Lynchia*. However, Weyenbergh's original text and Bequaert's (*l. c.*) translations were repeatedly reviewed. Reference was also made to actual specimens of *Lynchia* sen. Beq. and *Stilbometopa* and to the 3 papers[3] cited by Weyenbergh. These strongly impressed me that the following 11 points are to be reconsidered and that Weyenbergh's genus seems to fit *Stilbometopa* instead of *Lynchia* sen. Beq.

(a) The Antennae: Said to be longer than in *Ornithomya*. This is more true for *Stilbometopa* than for *Lynchia* sen. Beq.

(b) The Eyes: Said to be very globular ("muy esféricos"). Although somewhat exaggerated, this is also more true for *Stilbometopa* than for *Lynchia* sen. Beq. In the former genus, the eyes are more prominent and shorter in proportion.

(c) The Palpi: The mouthparts were said to be *very short* and completely hidden within the *short* sheath that envelops them ("Los órganos bucales son muy cortos y están completamente ocultos en la corta vaina que los contiene"). The shortness of the palpi or "sheath" in his *Lynchia* was realized by Weyenbergh apparently by comparison with the neighboring antennae and with Meigen's (1830: pls. 63–64) figures. In *Stilbometopa*, the palpi are only about 1/3 as long as the antennae and are quite significantly shorter in proportion than all those figured by Meigen for hippoboscids (*Hippobosca*, *Ornithobia*, *Ornithomya*, *Stenopteryx*, *Anapera* and *Melophagus*). But in most if not all species of *Lynchia* sen Beq., the palpi are distinctly longer than the antennae and are more or less similar to those in Meigen's figures.

(d) The Mesonotal Median Suture: Said to be *not furrow-like* but much raised and even forming a linear elevation ("La línea..., pero la longitudinal, que en los otros géneros se asemeja á un surco, es muy elevada en *Lynchia*, de modo que forma mas bien, por el contrario, un elevacion lineal." In *Stilbometopa*, this suture is never distinct and never complete although the linear elevation, somewhat variable and often well defined. In *Lynchia* sen. Beq., the suture is always distinct and complete and the linear elevation, never well defined.

(e) The Mesothoracic Spiracles: Said to be *ovate* and on the outer angle of the

3. Meigen, J. W. 1830. Systematische Beschreibungen der bekannten europaeischen zweiflügeligen Insekten. **6**: i-xi & 1-401, pls. 55–66.
Schiner, J. R. 1860–62. Fauna Austriaca. Die Fliegen (Diptera). **1**: i-lxxx & 1–674.
Van der Wulp, F. M. 1871. Tijdschr. v. Ent. **14**: 79–98, pls. 2–3.

"prothorax" ("En el ángulo esterno del protorax se vé un estigmato oval"). In all known American species of *Lynchia* sen. Beq., these spiracles are not dorsal, not oval but small, linear, lateral or dorsolateral, largely concealed in the deep post-humeral sutures and may be easily overlooked by chance observers. In *Stilbometopa*, on the other hand, they are large, oval, in extreme dorsal position, well exposed and quite conspicuous.

(f) The Scutellum: Said to be very short and broad ("El escudete es muy corto y ancho"), and in the species *penelopes*, said to be with hairs along the posterior margin ("lleva pelos en su borde posterior"). These seem to be referable more favorably to *Stilbometopa* rather than *Lynchia* sen. Beq. Of course, the term "pelos" can be interpreted as either the short, fine, soft and pale (thus inconspicuous) hairs found in *Lynchia* sen. Beq., or the numerous long, heavy, stiff and black bristles found in *Stilbometopa*. These long bristles in *Stilbometopa* are quite dense and quite regularly arranged somewhat comb-like along the full length of the sharply edged posterior margin and are so conspicuous that they might have arrested Weyenbergh's attention. In *Lynchia* sen. Beq., there are only 2 long bristles situated much before the rather roundly edged posterior margin, and in all known American species of that genus, they are widely apart and placed, one at a side, close or rather close to the lateral corner. Furthermore, Weyenbergh used "pelos" or "peludas" only for (aside from the scutellum) describing the antennae, legs and abdominal apex. In all 3 cases, it referred apparently to the long conspicuous bristles but not the short, fine, pale and inconspicuous hairs.

(g) The Longitudinal Veins: Weyenbergh admitted, as pointed out by Bequaert, that he adapted Schiner's (1864) horismology as set forth by van der Wulp (1871) and that the wings and their venation of *Ornithomya* introduced by him for comparison were taken from Meigen's (1830) crude drawing (rather than from actual specimens). Insofar as the longitudinal veins are concerned, his terminology and description are fairly clear and have been quite appropriately interpreted and annotated by Bequaert. The only point of importance seems to be that the anal vein (annotated by Bequaert as the 6th longitudinal but in *Lynchia* sen. Beq., actually the 7th instead, according to Schiner's system) (=2A in my notation) was described as having a double origin and to run with a strong curve to the posterior margin of the wing ("La nervadura anal nace con raiz doble, se dirige, con fuerte curvatura, al borde posterior del ala"), and that the "discoidal" and "true posterior" veins (M_{1+2} and M_{3+4}, in my notation) as with bend and gradual curves. But in *Lynchia* sen. Beq., these 3 longitudinal veins are similarly curved toward the posterior margin of the wing, the anal is by no means more strongly so. See discussions under the "2nd transverso-posterior" vein (*postea*) and compare figs. 3–4.

(h) The Transverso-Basal Vein: This crossvein, generally known as the humeral crossvein (*h*), was said to be not absent but placed in an outwardly standing direction between the costal (C) and "subcostal" (R_1) veins before the origin of the mediastinal vein (Sc) "No falta tampoco la transverso-basal, pero está colocada oblícuamente hácia afuera, entre la costal y la subcostal, antes del punto en que esta da orígen á la mediastina"). And near the end of the generic description, the same crossvein was said to be more perpendicular in *Ornithomya* than in his *Lynchia* ("La transverso-basal en mas perpendicular en *Ornithomyia*"). From these words, the existence of this crossvein in Weyenbergh's insect is not to be questioned. I have so far failed to find it clearly in *Lynchia* sen. Beq., although it is very well developed in *Stilbometopa*.

(i) The Other Crossveins: Van der Wulp's terminology of the other crossveins seems not quite consistent in the following points: 1) The posterior end of his vena transversa media, marked as *w*, was drawn as if joining either M_{1+2} as in most of his figures, or M_{3+4} as in his fig. 16. 2) His vena transversa posticalis, marked as *x*, was near either the base or apex of the wing and was behind M_{3+4} except in his fig. 6 where it was before M_{3+4}. 3) His vena transversa discoidalis was marked *y* only in 4 of his figures and was placed near either the center or apical margin of the wing. 4) His *x*- and *y*-veins, when both present and situated between M_{1+2} and M_{3+4}, were near the wing-base and wing-apex respectively. However when there was only 1 crossvein between the M-branches, it was marked either *x* as in his figs. 7–9, or *y* as in his fig. 10, regardless their relative position. 5) The *mcu* or the crossvein behind M_{3+4} (except in his fig. 6 where it was marked *x*) was simply called "Vertakking of terugloopende ader van de posticaal-ader" without an appropriate Latin name. Under such circumstances, Weyenbergh obviously had much difficulty with the terminology of crossveins other than the transverso-basal. He might have so confused himself that the terminology used in his manuscript was perhaps partly, but not thoroughly, revised more than once. The unfortunate result was two conflicting systems for these crossveins simultaneously existing in his paper, one for *Lynchia* and another for *Ornithomya*. In the former genus, he employed the terms transverso-media and transverso-discoidal but in the latter genus, the transverso-media was not mentioned. For both genera he introduced his own terms, the 1st and 2nd transverso-posteriors, apparently intended to substitute for van der Wulp's vena transversa posticalis and Vertakking ader van de posticaal-ader, respectively. In all, this is the most confusing passage in Weyenbergh's lengthy description and is the hardest to interpret with absolute certainty. For convenience and other reasons, the crossveins in question may be discussed separately in a reverse order.

(i–l) The "2nd Transverso-Posterior" Vein: Weyenbergh stated that in *Ornithomya* there seemed to be a 2nd transverso-posterior vein placed very near the articulation, between the anal and posterior veins, immediately beyond the bifurcation of the common posterior into discoidal and true posterior veins. ("Tambien parece existir en *Ornithomyia* un segundo nérvulo transverso-posterior, situado muy cerca de la articulacion, entre las nervaduras anal y posterior, inmediatamente detrás de la bifurcacion del posterior comun en discoidal y verdadero posterior"). As interpreted by Bequaert, this "2nd transverso-posterior" in *Ornithomya* is, beyond any doubt, referable to *mcu* (in my notation), to Bequaert's posterior basal (1926) or anal (1955) crossvein, and to van der Wulp's Vertakking ader van posticaal-ader. The same crossvein, as said by Weyenbergh, is absent in *Lynchia* sen. Beq. and present in *Ornithomya*. Nevertheless I would here bring forth both fact and presumption about this vein found in a genus not mentioned in Bequaert's discussion. In *Stilbometopa*, the basal abscissa of Cu+1A is broadly interrupted at about its mid-length. This is a feature unique for the genus and is unknown in other hippoboscids. The basal 1/2 of this abscissa is very thick, strongly sclerotized, deeply pigmented and terminates near the bottom of the axillary incision. It is so situated that one may fairly easily mistake it as either the basal stump of the weak, transparent vein 2A, or a short side-branch of the posterior venal stem, or a basal axillary sclerite (particularly when the wings are not fully expanded). In strong contrast, the apical 1/2 of the same abscissa is very thin, weakly sclerotized and scarcely pigmented. It is even distinctly thinner, weaker, and paler than the extreme basal portion of the succeeding abscissa and hence superficially does not look like the origin of the latter. On the other hand, the *mcu* is so thick, strong and deeply

pigmented that it is quite possibly to be mistaken for a strongly curved basal abscissa of Cu+1A. In all, I am much inclined to presume that Weyenbergh might have a *Stilbometopa*-species before him and that the above described features of *Stilbometopa* might have led him to describe (original text quoted above) the anal vein in his genus as having a DOUBLE origin and running in a strong curve, and the "2nd transverso-posterior" as entirely lacking ("no existen absolutamente").

Table 3. Weyenbergh's crossveins and their interpretations.

Present notation	Van der Wulp 1871	Weyenbergh 1881		Bequaert 1926, 1955	
		Lynchia	*Ornithomya*	*Lynchia*	*Ornithomya*
h	vena transversa radicalis (*v*)	transverso-basal vein	same as in *Lynchia*	humeral crossvein (*h*)	same as in *Lynchia*
rm	vena transversa media (*w*)	transverso-media vein	"transverso-discoidal vein"	anterior crossvein (*r-m*)	"anterior basal crossvein (M_3)"
	vena transversa posticalis (*x*)	transverso-discoidal vein	1st transverso-posterior vein	anterior basal crossvein (M_3)	anterior basal crossvein (M_3)
im		(also as absent: 1st transverso-posterior vein)		(posterior crossvein (*m*) 1926; discoidal crossvein 1955)	
mcu	vertakking of teruglo-opende ader van de posticaal-ader (*z*)	(as absent: 2nd transverso-posterior vein)	2nd transverso-posterior vein	(posterior basal cross-vein (Cu_2) 1926; anal crossvein 1955)	posterior basal cross-vein (Cu_2) 1926; anal crossvein 1955

Note: Weyenbergh's transverso-discoidal in *Ornithomya* seems to be an apparent error for transverso-media. This error misled Bequaert to interpret it as the anterior basal crossvein, and made Weyenbergh's *Ornithomya* seemingly to have TWO anterior basal crossveins. See discussions under the 1st transverso-posterior and transverso-discoidal veins.

(i–2) The "1st Transverso-Posterior" and "Transverso-Discoidal" Veins in *Ornithomya*: Regarding the relative positions of these 2 crossveins in *Ornithomya*, Weyenbergh's description is clear and easily understandable. However, his self-devised terminology for them is incorrect and exceedingly confusing, particularly because his "transverso-discoidal" in *Ornithomya* is apparently NOT HOMOLOGOUS WITH that in his *Lynchia*. The original text and Bequaert's (1926) translation and annotation are:

> "Además, en *Ornithomyia*, existe el primer nérvulo transverso-posterior, el cual se observa casi al nivel del transverso-discoidal, cuya continuacion parece ser, formando con él una figura algo semejante á S, y es especialmente esta circunstancia la que establece una differencia importante en esta parte del ala, cuando se comparan los dos géneros entre sí. (In addition in *Ornithomyia* there is a first transverso-posterior vein, which is found at about the level of the transverso-discoidal [anterior basal crossvein; M_3], of which it appears the continuation, forming with it a figure resem-

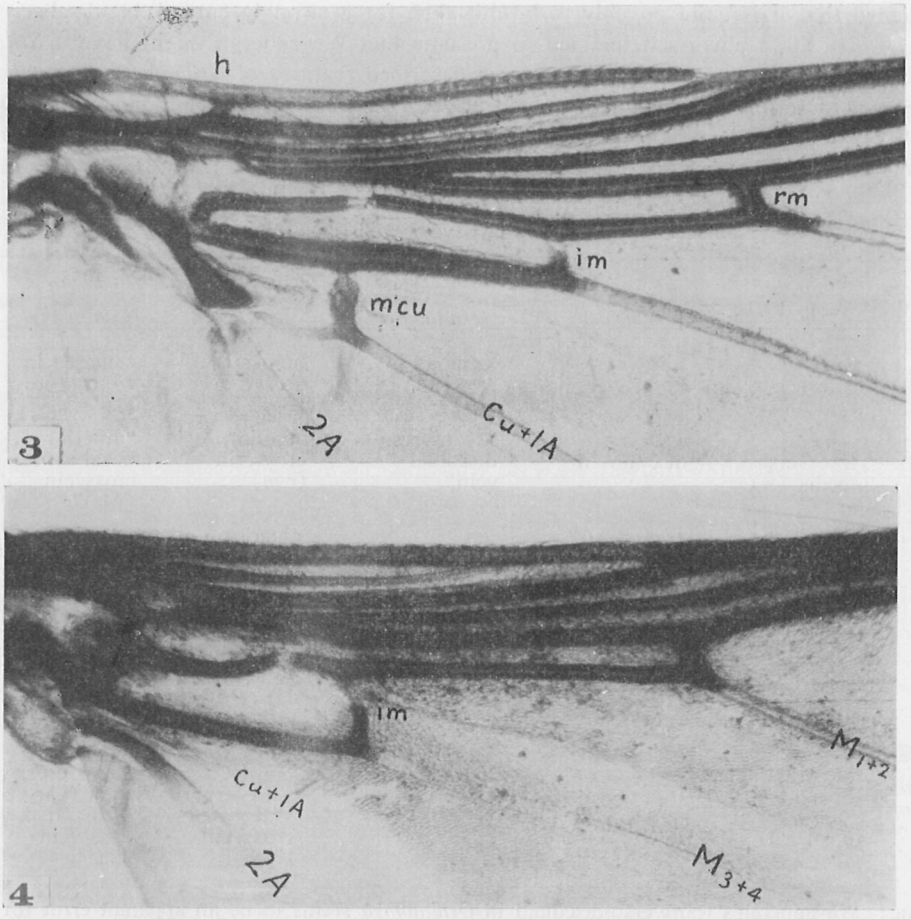


Fig. 3. *Stilbometopa impressa* (Bigot), ♀, California and Fig. 4. *Lynchia nigra* (Perty), ♀, Hawaii Is. Basal portions of right wings showing why Weyenbergh described his genus *Lynchia* as "No existen nérvulos transverso-posteriores. La nervadura anal nace con raiz doble, se dirige, con fuerte curvatura, al borde posterior del ala."

bling S, and it is especially this feature which makes an important difference in that part of the wing, when the two genera are compared [In *Ornithomyia* the anterior crossvein and the anterior basal crossvein are close to each other, whereas in *Lynchia* they are far apart.])"

Here it should be noted that Weyenbergh employed the term "transverso-discoidal" rather than "transverso-media" which he mentioned in the description for *Lynchia.* Also to be noted is that Bequaert did not annotate Weyenbergh's 1st transverso-posterior, in the translation (but elsewhere, see below). Obviously by oversight and by confusion with Weyenbergh's misleading terms, Bequaert annotated the so-called transverso-discoidal as the anterior basal crossvein. Meanwhile he remarked that the anterior crossevein and the anterior basal crossvein were, in *Ornithomya,* close to each other. A superficial glance over the wording would result in the quite wrong impression that the "1st transverso-posterior"

was the anterior crossvein which is the only alternative left in Bequaert's remarks. Weyenbergh did not clearly indicate between which 2 longitudinal veins his 1st transverso-posterior occurred, or whether it was before or behind his transverso-discoidal. But under the above mentioned impression, the 1st and 2nd "transverso-posteriors", respectively, would be situated as if before and behind the "transverso-discoidal." On the other hand, in the discussion (1926b: 270) and footnote (1955: 271) Bequaert concluded that Weyenbergh's 1st transverso-posterior in *Ornithomya* was homologous with Weyenbergh's transverso-discoidal in *Lynchia*. The latter vein was interpreted by Bequaert as the anterior basal crossvein. This means that he indirectly interpreted Weyenbergh's 1st transverso-posterior in *Ornithomya* to be the anterior basal crossvein. Both the conclusion and interpretations are certainly sound and correct. Nevertheless, he overlooked the fact that the "transverso-discoidal" in *Ornithomya* was already annotated by himself (in the passage quoted above) as the anterior basal crossvein. This resulted in still another wrong impression that there were two such crossveins in *Ornithomya*.

Both in Meigen's figure and in actual specimens of *Ornithomya* (and any other hippoboscids too), there is no crossvein lying behind the *mcu*. And, the correctness of the interpretation of Weyenbergh's 2nd transverso-posterior, as discussed above, is quite beyond doubt. Therefore it appears merely common sense to presume the crossvein lying immediately before the "2nd transverso-posterior" to be the 1st. Consequently, in *Ornithomya*, Weyenbergh's 1st transverso-posterior is most probably the *im*, and his "transverso-discoidal" (not that in his *Lynchia*), an error for his transverso-media.

(i–3) The "Transverso-Discoidal" Vein in *Lynchia*: Weyenbergh's description regarding the existence and relative position of this crossvein in his *Lynchia* seems even clearer and more easily understandable than that for *Ornithomya*. Quoted below is Bequaert's (1926) translation of that passage (annotations mine):

> "The discoidal vein [M_{1+2}] runs at first [that is, starting from its clear transparent portion] a little toward the hind margin, thence with a *bend* toward the fore margin [of the wing]... After being connected with the cubital [R_{4+5}], at a point *about 2/3* [that is, apical 2/3] along the cubital, by means of the transverso-media [*rm*], the discoidal runs in a gradual curve toward the posterior margin of the wing... The transverso-discoidal [*im*] unites the true posterior [M_{3+4}] with the discoidal [M_{1+2}] at the point where that vein forms the above-mentioned bend, thus forming the discoidal cell [*2bc*]. There are no transverso-posterior veins."

The description is so clear that Weyenbergh's transverso-discoidal here (but not in his *Ornithomya*) appears to be homologous with the hintere Querader of Speiser (1902), with the vena transversa posticalis of van der Wulp (but not his vena transversa discoidalis), and with the anterior basal crossvein of Bequaert. However, two points in the description have long puzzled me. First, nothing was mentioned regarding the clear transparent portion of this crossvein which is, in *Lynchia* sen. Beq., usually (if not always) as conspicuous as that of the M_{1+2}. The latter portion was so strongly emphasized by Weyenbergh that it would be hardly conceivable the former portion could have escaped his attention. Second, the *rm* was described as being situated at a point of 2/3 along the R_{4+5} (here he did not clearly mention whether it was basal or apical 2/3, but for the anal vein, he did say "at a point of 3/4, ...as measured from the tip of the wing"). But in *Lynchia* sen. Beq., the *rm* lies just at (or very slightly beyond) the midlength of the R_{4+5}. A closer examination

of the venation in *Stilbometopa* seems to disclose the answer. In the latter genus, the clear transparent portion of the *im* is unusually (for all Ornithomyinae known) small and obscure, and the *rm* meets R_{4+5} at a point of about apical 2/3 of the latter.

(i–4) The Missing Vein "1st Transverso-Posterior" in *Lynchia*: Both for *Ornithomya* and his *Lynchia*, Weyenbergh described the "transverso-posteriors" in plural number. And from his wording, it seems that the "1st" one of these crossveins was situated at about the level of the "transverso-discoidal" in *Ornithomya* and in his *Lynchia* (should this crossvein be present there); and that as if the one found far basad to the above mentioned level was to have a different name! Do these mean that under Weyenbergh's presumption, there were in hippoboscids either 2 or none, not 1 "transverso-posteriors" behind the "transverso-discoidal"? For his *Lynchia*, they were simply described as "no existen" (on p. 5) and "no existen absolutamente" (on p. 6). From these, Speiser interpreted the genus as "die hintere Basalzelle ganz offen ist, die hintere Querader total fehlt." In 1926 Bequaert annotated the 2 missing "transverso-posteriors" in Weyenbergh's *Lynchia* as the posterior crossvein *m* and posterior basal crossvein Cu_2 respectively; and in 1955, as the discoidal and anal crossveins. It would not be of any use to go further about them, and in Table 4, I am listing Bequaert's interpretation.

(i–5) The "Transverso-Media" Vein: Quite obviously this is referable to the *rm*, or in Bequaert's terminology, the anterior crossvein. The only puzzles in this connection left by Weyenbergh are why he used the term "transverso-discoidal" instead of "transverso-media" for *Ornithomya*, and if this was intentional or a lapsus calami.

(j) The Axillary Cell and Wing Shape: The axillary cell in *Lynchia* was described as large and wide, and the wings, very long and apically very pointed. These 2 features seem to be less conspicuous in *Lynchia* sen. Beq. than in *Stilbometopa*.

(k) The Body Size and Host Record: Weyenbergh's species was described as 8 (♂) or 10 (♀) mm in body length not including wings, and as 250 mm in wing-expanse. Of course the size cannot be counted as a generic character. But it is of some importance to remember that such a huge species of *Lynchia* sen. Beq. has not been rediscovered in the last 80 years and that it can be hardly overlooked by collectors. The host of the species was noted by Weyenbergh in both vernacular and scientific names. According to Bequaert, it might have been either *Ortalis c. canicollis* Wagler or *Penelopes o. obscura* (or its relative). Both genera are of the Cracidae, Galliformes and are known as hosts of *Lynchia* sen. Beq. (*plaumanni* Beq., 1 record) and *Stilbometopa* (*legtersi* Beq., *ramphastonis* Ferr., 3 records).

Among the 11 points discussed above, the criterion of Weyenbergh's genus appears to be the passage "No existen nervulos transverso-posteriores. La nervadura anal nace con raiz DOBLE..." Being misled and prejudiced by the first of these 2 sentences, apparently both Speiser and Bequaert overlooked the paramount importance of the second sentence and reached faulty conclusions. I must apologize in pointing out herewith that repeated comparisons of *Stilbometopa*-specimens against Weyenbergh's description (as interpreted above) failed to disprove their conformity. However, it is by no means advisable to hastily suppress *Stilbometopa* as a junior synonym, particularly since this synonymy may lead to changes in generic names of nearly 1/3 of the known species of the entire family and may involve the unsolved problem regarding the authorship and publication-date of the name *Olfersia* (*cf.* alphabetic list of genera, *supra*). From evidence at hand, the probable se-

quence would be:

(a) *Lynchia* Weyenb. 1881=*Stilbometopa* Coq. 1899; and *L. penelopes* Weyenb. 1881= *S. ramphastonis* Ferr. 1930. This may affect the generic names of other 4 *Stilbometopa*-species and of all species now assigned to *Lynchia* sen. Beq. 1926.

(b) *Olfersia* Say 1823=*Lynchia* sen. Beq. 1926. This may result in the designation of *albipennis* Say instead of *spinifera* Lch. as type species of the genus, and may affect the generic names of about 36 species now assigned to *Lynchia* sen. Beq., and to *Olfersia* Wdm. which is definitely a preoccupied generic name.

(c) *Pseudolfersia* Coq. 1899=*Olfersia* Wdm. 1830 (preoccupied). This may affect the generic name of 7 "*Olfersia*"-species to go back to *Pseudolfersia.*

The genus, as here understood, is the most diversified in the family, and contains quite a number of undescribed species from the Oriental and Ethiopian Regions. Hence the key to and the arrangement of the species-groups offered below must be considered provisionary. Although the evolution within the genus is not quite clear, it appears that the *americana*-group represents probably the most generalized forms, and *nigrita*- and *meda*-groups, the most specialized ones. The *hirsuta*- and *holoptera*-groups apparently have derived from a common stock with the *americana*-group, whereas the *plana*-, *dioxyrhina*- and *longipalpis*-groups, all having distinct vibrissal processes, together constitute a "Formenkreis." The 2 Ethiopian groups, *pilosa* and *massonnati*, are rather isolated. The directions or tendencies of diversification in the various species-groups are as follows:

(i) The sexual dimorphism. Significant in the *massonnati*-, *pilosa*-, *dioxyrhina*- and *nigrita*-groups, either in the degree of the abdominal sclerotization, or in the chaetotaxy of the abdominal dorsum, or in the extent of the wing-setulae.

(ii) The facial and thoracic pilosity. Very dense in the *pilosa*-group simulating that in *Pseudolynchia.*

(iii) The vibrissal processes. Sharply defined in the *simplex*-, *plana*-, *dioxyrhina*- and *longipalpis*-groups and stronger than in all other genera including *Pseudolynchia.*

(iv) The eyes. Exceedingly small in the *holoptera*- and *nigrita*-groups, with compensations by either dense long setae on head and legs, or exceedingly large thoracic spiracles. The reduction of the eye-size results in the widening of the interocular face and the lengthening of the postorbits. The eyes in the *hirsuta*-group are moderately small.

(v) The ocelli. Small but distinct in the *simplex*-group, vestigial in some species belonging to the *americana*-group, somewhat similar to those found in *Microlynchia.* In many groups, the ocelli are represented by a small pit or a longitudinal furrow when the postvertex is large, or are entirely untraceable when the postvertex is short and anteriorly truncate.

(vi) The mesothoracic spiracles. Dorsal and excessively large in the *nigrita*- and *meda*-groups, simulating those in *Ornithoctona* and *Stilbometopa.* These spiracles were termed prothoracic by Bequaert (1953: 76) after Keilin's (1944) study in the dipterous larvae.

(vii) The median scutellar furrow. Absent in the *pilosa*- and *longipalpis*-groups, as in *Microlynchia* and *Olfersia.* The furrow is present in other species groups and is represented by a narrow triangular rugulose median depression in *Pseudolynchia.*

(viii) The posterior scutellar truncation. Found in the *longipalpis*- and *nigrita*-groups

and resulting in the shortening of the scutellum. This is a feature common to *Pseudolynchia* and *Olfersia*.

(ix) The scutellar bristles. Strongly switching mesad in the *meda*-group, being a character unknown to related genera. In all other groups and in *Microlynchia* and *Pseudolynchia* as well, these bristles (1 at a side) are situated close to lateral corners. In *Stilbometopa*, they are extremely numerous and in *Olfersia*, absent.

(x) The metabasisternal processes. Well developed in the *longipalpis* and *dioxyrhina*-groups and about as strong as in the genera *Stilbometopa* and *Pseudolynchia*; poorly developed or entirely absent in other groups and genera.

(xi) The wing shape and size. In the *nigrita*-group, the wings are more or less narrowed and apical margin of the cell 2m+1a (*i. e.*, the "combined anal, 3rd posterior and axillary cells" of Bequaert) may be concavely curved. In *L. leptoptera* species from Thailand, the wings are only 1/4 as long as wide and are incomparable with those in other groups and in related genera.

(xii) The longitudinal veins. The R-branches and basal portions of M-branches crowded together more closely toward C in specialized forms such as *pilosa*- and *nigrita*-groups than in generalized ones.

(xiii) The basal abdominal laterotergite. Laterally distinctly lobed in the *meda*-group (where it is apparently merged with 3rd laterite), weakly so in the *massonnati*- and *plana*-groups and not lobed at all in many others. In *Microlynchia* and *Pseudolynchia*, the lobes are poorly developed.

(xiv) The abdominal sclerotization. The median tergal plate in the striate area is usually single and situated near the base, seldom 1 each near the base and apex (as in the *hirsuta*-group) or entirely absent (as in *L. nigra* Perty of the *americana*-group). In *Microlynchia*, it is also single but placed basally in ♀ and apically in ♂; and in *Pseudolynchia*, it is single and placed basally in ♀ and there are 2 in ♂ where the apical one is medially broadly interrupted. In *Olfersia*, it is in close contact with the basal laterotergite. The laterites, as in *Microlynchia*, *Pseudolynchia* and *Olfersia*, are usually weakly sclerotized but in the *massonnati*- and *nigrita*-groups, well defined.

Key to species-groups of Lynchia sen. Beq.

1. Vibrissal area (genal area) distinctly toothed anteroventrally, clearly separated by deep incision from frontal ridge (lateral extension of frontal process) which is apically pointed and projecting much beyond level of vibrissal tooth; metabasisternum often produced at each side a spur-like posterolateral process overlapping base of hind coxa; outer and inner apical lobes of 4th tarsomere of fore leg often distinctly unequal in length and size. Palaeotropics 2

   Vibrissal area anteroventrally rounded-off, very seldom angulate or subangulate, to frontal ridge but never toothed and latter never deeply incised; metabasisternum posterolaterally broadly rounded or obliquely subtruncate, never produced spur-like; apical lobes of 4th tarsomere of fore leg always equal in length and size 4

2 (1). Metabasisternal process distinct, spur-like, overlapping base of hind coxa; inner

and outer apical lobes of 4th tarsomere in fore leg equal in length..... 3

Posterolateral margin of metabasisternum at most slightly waving, never forming spur-like process to overlap base of hind coxa; inner apical lobe of 4th tarsomere in fore leg distinctly shorter than outer lobe..... **plana**-group

3 (2). Palpus not shorter than interdistance of vertical bristles; metabasisternal process shorter than wide at base, apically blunt; setulose area of wing extending posteriorly beyond vein 2A ..... **longipalpis**-group

Palpus much shorter than interdistance of vertical bristles; metabasisternal process longer than wide at base, apically pointed; setulose area of wing posteriorly not extending beyond (usually far from reaching) vein 2A .... **dioxyrhina**-group

4 (1). Mesonotum uniformly covered with dense soft recumbent hairs; scutellum not furrowed medially; inner orbit leathery, not shining; abdominal dorsum extensively setose ..... **pilosa**-group

Mesonotum largely bare, with small patch of soft recumbent hairs at anterolateral corner of praescutum and few scattered ones elsewhere, never uniformly pilose; scutellum furrowed medially; inner orbit shining; disc of abdominal dorsum largely bare..... 5

5 (4). Mesothoracic spiracle dorsal, exceedingly large, with shorter axis about 1/2 as long as longer axis; scutellum either with submedian (not lateral) bristles or with nearly straight hind margin 6

Mesothoracic spiracle lateral, not or hardly visible dorsally, linear, with shorter axis only a fraction as long as longer axis; scutellum always with lateral bristles and convexly curved hind margin..... 7

6 (5). Eye excessively small, in front view of head, only about 1/3 as wide as interocular face; postorbit about as long as average width of inner orbit; scutellum nearly 1/2 as long as mesoscutum, posteriorly subtruncate, with 1 bristle at each lateral corner..... **nigrita**-group

Eye normal in size, more than 1/2 as wide as interocular face in front view of head; postorbit much shorter than width of inner orbit; scutellum hardly shorter than mesoscutum, with 1 bristle at each side intermediate of median line and lateral corner ..... **meda**-group

7 (5). Abdomen with 2 median tergal plates in dorsal striate area, 1 each near base and apex; praescutum with 3 long bristles in each anterolateral patch of short soft recumbent hairs..... **hirsuta**-group

Abdomen without or with only 1 median tergal plate near base of dorsal striate area; praescutum with no such long bristles..... 8

8 (7). Eye excessively small, only about 1/5 as wide as head in front view; postorbit not shorter than average width of inner orbit; postvertex almost as long as mediovertex; inner orbit as wide as antennal base; wing uniformly setulose except very narrow strip along free margin of cell *2a*..... **holoptera**-group

Eye normal in size, 1/4–1/3 as wide as head in front view; postorbit much shorter than width of inner orbit; postvertex much shorter than mediovertex; inner orbit often 1/2 as wide as, always narrower than antennal base; setulose area of wing extending posteriorly at most slightly beyond vein 2A; cell *2a* usually entirely bare, seldom setulose along vein 2A 9

9 (8). Ocelli all distinct; wing-membrane thoroughly setulose except narrow strip along free margin of cell *2a*; inner orbit with 1 series of soft hairs, in addition to major fronto-orbital bristles. Oriental Region ..... **simplex**-group

Not in such combination of characters; ocelli almost always entirely absent, when (only in 1 Neotropical sp.) distinct or vestigial, then cells *2m+1a* posteriorly and *2a* entirely bare 10

10 (9). Abdomen with heavily sclerotized laterites both dorsally and ventrally, and in ♀, dorsally with 2 large submedian bunches of long strong bristles at each side; basal laterotergite distinctly curved caudad at both ends; setulose area of wing uniformly covering entire membrane except most of cell *2a* .... **massonnati**-group

Abdomen at most with poorly developed laterites in ♀, never with bristle-bunches described above; basal laterotergite posteriorly straight, not curved at ends; setulose area of wing, except in *albipennis* and *setosa*, posteriorly far from reaching vein 2A ..... **americana**-group

(i) **americana**-group (*Ornithoponus*)

48. Lynchia albipennis (Say) 1823.

†*Olfersia albipennis* Say 1823 ("USA"; *restricte*: E. Nebraska).
[*Hippobosca metallica* Schummel 1833 (Silesia)]. nom. nud.
†*Olfersia ardeae* Mcq. 1835 (Sicily).
**Olfersia propinqua* Wk. 1849 (Jamaica).
**Olfersia botauri* Rndn. 1879 (Italy).
**Olfersia coriacea* Wulp 1903 (pt., paratype only) (Mexico).
Stilbometopa podopostyla* Speis. 1904 (pt., paratype from Mato Grosso only) (C. Brazil). **New Synonymy.
**Olfersia palustris* Lutz 1915 (Brazil).
Olfersia botaurinorum Swenk 1916 (Nebraska).

DISTRIBUTION: According to Bequaert (1955: 337), nearly cosmpolitan, commoner in tropics and subtropics.

HOST PREFERENCE: Pleioxenous, on Ciconiiformes, particularly Ardeidae (of which 16 genera have been recorded as hosts). The complete list of host records involves 23 genera in Ciconiiformes, and 17 in Grui-, Charadrii-, Falconi-, Strigi-, Passeri- and Anseriformes.

49. Lynchia americana (Lch.) 1817.

**Feronia americana* Lch. 1817 (Georgia in USA).
[*Ornithomyia falconis* Harris 1833 (Massachusetts)]. nom. nud.
(?)†*Ornithomya fusca* Guér. 1838 (no locality).
**Olfersia fusca* Mcq. 1843 ("Nova Grenada"; *restricte*: Colombia).
**Hippobosca bubonis* Pack. 1869 (no locality; *restricte*: Massachusetts).
(?)[*Hippobosca aquilae* Brodie & White 1883 (Canada)]. nom. nud.
**Ornithomyia rufiventris* Bigot 1885 (Brazil).
Olfersia scutellaris Swenk 1916 (Michigan).

DISTRIBUTION: Southern Nearctic and continental Neotropical Regions, widely spread.

HOST PREFERENCE: Polyxenous; recorded from 36 genera in Falconi-, Strigi-, Galli-, Ciconii-, Charadrii-, Columbi-, Passeri- and Piciformes. Probably the first 3 of these 8 orders are preferred.

50. Lynchia angustifrons (Wulp) 1903.

**Olfersia angustifrons* Wulp 1903 (Costa Rica, Mexico).

DISTRIBUTION: Continental Neotropical Region, widely spread, also with stray summer records from southern Ontario and the USA.

HOST PREFERENCE: Pleioxenous, on Falconiformes of which 15 genera have been recorded as hosts; stray records are from 14 genera in Passeri-, Coracii-, Pici-, Strigi-, Trogoni-, Charadrii- and Psittaciformes.

51. Lynchia dukei (Austen) 1911.

**Olfersia dukei* Austen 1911 (Uganda).

DISTRIBUTION: E. African Subregion.

HOST PREFERENCE: Pleioxenous; recorded only from 8 genera in Accipitridae and Falconidae (Falconiformes).

52. *Lynchia latifacies Beq. 1955 (Brazil, Paraguay).

DISTRIBUTION: Brazilian Subregion (Brazil, Paraguay).

HOST PREFERENCE: Hardly known, only recorded from *Piaya* (Cuculidae, Cuculiformes).

53. Lynchia minor (Bigot) 1858. n. comb.

**Olfersia minor* Bigot 1858 (Gabon).

DISTRIBUTION: W. African Subregion.

HOST PREFERENCE: Hitherto unknown, but the materials at my disposal are all from Passeriformes.

54. Lynchia nigra (Perty) 1833.

**Hippobosca nigra* Perty 1833 (Brazil).
†*Olfersia fuscipennis* Mcq. 1835 (Brazil).
**Olfersia mexicana* Mcq. 1843 (pt., lectotype only) (Mexico).
**Ornithomyia intertropica* Wk. 1849 (Galapagos Is.).
Olfersia pallidilabris Rndn. 1878 (Mexico).
Olfersia obliquinervis Rndn. 1878 (Mexico).
Olfersia macquartii* Rndn. 1878 (Nova Grenada). **New Synonymy.
(?)†*Ornithomyia villadae* Dugès 1887 (Mexico).
**Olfersia acarta* Speis. 1902 (Hawaii Is.).
Olfersia raptatorum Lutz 1915 (Brazil).

DISTRIBUTION: Continental Neotropical Region, widely spread, with sporadic records from the Nearctic Region; also found in the Galapagos and Hawaii Is.

HOST PREFERENCE: Pleioxenous, recorded from 17 genera in Falconiformes; stray

records are from 3 genera in Strigi- and Cuculiformes.

55. *Lynchia plaumanni Beq. 1943 (Brazil, Brit. Guiana, Bolivia).

DISTRIBUTION: Mexican and Brazilian Subregions, sporadic.

HOST PREFERENCE: Uncertain; recorded from 5 genera in Galli-, Tinami- and Passeriformes. Possibly the first order is preferred.

55a. *Lynchia setosa Ferr. 1927 (Palawan, Luzon).

DISTRIBUTION: Philippine Subregion, spreading southward to Palawan.

HOST PREFERENCE: Little known, recorded only from *Bubulcus* and *Ixobrychus* (Ardeidae, Ciconiiformes) and *Circus* (Accipitridae, Falconiformes). Probably the former family is preferred.

55b. *Lynchia suvaensis Beq. 1941 (Fiji Is.).

DISTRIBUTION: Melanesian Subregion (Fiji Is.).

HOST PREFERENCE: Hitherto unknown. The only available record (unpublished) is from a "parrot" (Psittacidae, Psittaciformes).

56. Lynchia wolcotti (Swenk) 1916.

Olfersia wolcotti Swenk 1916 (Michigan).

DISTRIBUTION: Nearctic and continental Neotropical Regions, sporadic.

HOST PREFERENCE: Polyxenous, recorded from 6 genera in Falconi- and Strigiformes.

(ii) **hirsuta**-group

57. *Lynchia hirsuta Ferr. 1927 (California).

DISTRIBUTION: Californian and Rocky Mts. Subregions.

HOST PREFERENCE: Oligoxenous, recorded from 4 genera in Phasianidae (Galliformes), with stray records from another 4 genera in Passeriformes.

(iii) **holoptera**-group

58. Lynchia holoptera (Lutz) 1915.

Olfersia holoptera Lutz 1915 (Brazil).

DISTRIBUTION: New World, probably widely spread although heretofore only recorded from the Alleghenian and Brazilian Subregions (Colombia, Brazil).

HOST PREFERENCE: Oligoxenous, on Rallidae (Gruiformes) of which 3 genera have been recorded as hosts. Stray records are 1 genus each in Tinami- and Passeriformes.

(iv) **pilosa**-group

59. Lynchia pilosa (Mcq.) 1843.

**Olfersia pilosa* Mcq. 1843 ("Africa").

DISTRIBUTION: E. African Subregion, with stray records from Morocco.

HOST PREFERENCE: Oligoxenous, known from 5 genera in Ottidae (Gruiformes).

Stray records are from 1 genus each in Columbi- and Galliformes.

(v) **massonnati**-group

60. Lynchia massonnati (Falc.) 1926.

†*Ornithoponus massonnati* Falc. 1926 (France), n. name for "*americana* Lch." of Massonnat 1909.

DISTRIBUTION: Mediterranean Subregion (France), known from only the unique type specimen.

HOST PREFERENCE: Hardly known, only recorded from *Platalea* (Threskiornithidae, Ciconiiformes) which is obviously not the true breeding host.

61. *Lynchia schoutedeni Beq. 1945 (Congo, Kenya, Uganda, Abyssinia).

DISTRIBUTION: E. African and Indo-Chinese Subregions.

HOST PREFERENCE: Oligoxenous, known from 3 genera in Phalacrocoracidae (Pelecaniformes). Stray records are from 2 genera in Ardeidae (Ciconiiformes).

Note: As suggested by its author (1953a: 253), *schoutedeni* is possibly a junior synonym of *massonnati*.

(vi) **simplex**-group

62. Lynchia australica (Param.) 1954. n. comb.

Ornithophila australica Param. 1954 (Queensland).

DISTRIBUTION: Australotasmanian Subregion (SE Queensland).

HOST PREFERENCE: Hardly known, recorded only from *Alectura* (Megapodiidae, Galliformes).

63. Lynchia simplex (Wk.) 1861.

**Ornithomyia simplex* Wk. 1861 (Celebes).

DISTRIBUTION: Wallacea Subregion.

HOST PREFERENCE: Unknown.

63a. Lynchia maquilingensis (Ferr.) 1924.

**Ornithophila maquilingensis* Ferr. 1924 (Luzon).

DISTRIBUTION: Indo-Chinese, Malaysian and Philippine Subregions.

HOST PREFERENCE: Little known, possibly oligoxenous on Phasianidae, Galliformes. Recorded only from *Haematortyx* and *Gallus* of that family.

(vii) **plana**-group

64. Lynchia acromialis (Speis.) 1904. n. comb.

**Olfersia acromialis* Speis. 1904 (NE New Guinea).

DISTRIBUTION: Papuan Subregion.

HOST PREFERENCE: Hardly known. I have found it only on *Tanysiptera* (Alcedinidae, Coraciiformes).

65. Lynchia chalcolampra (Speis.) 1904.

Ornithomyia obscurata* Wk. 1861 (pt., paratype only) (Tondano nr. Celebes). **New Synonymy.
**Olfersia chalcolampra* Speis. 1904 (SE New Guinea).
**Lynchia pollicipes* Ferr. 1927 (Palawan).

DISTRIBUTION: Philippine, Wallacea and Papuan Subregions.

HOST PREFERENCE: Little known, recorded from 7 genera in Psittaci-, Falconi-, Columbi-, Cuculi- and Piciformes. Possibly the first order is preferred and serves as normal breeding hosts.

66. Lynchia plana (Wk.) 1861. n. comb.

**Ornithomyia plana* Wk. 1861 (NW New Guinea).
Olfersia papuana* Rndn. 1878 (NW New Guinea). **New Synonymy.

DISTRIBUTION: Papuan Subregion.

HOST PREFERENCE: Hitherto unknown. The only available records (unpublished) are from *Cracticus* (Cracticidae), *Pitohui* (Muscicapidae) and *Paradisaea* (Paradisaeidae), all of Passeriformes.

67. *Lynchia samoana Ferr. 1927 (Samoa Is.).

DISTRIBUTION: Melanesian Subregion (Samoa Is.).

HOST PREFERENCE: Little known, only recorded from *Turdus* and *Myiagra* (Muscicapidae, Passeriformes).

68. Lynchia trita (Speis.) 1905.

**Olfersia trita* Speis. 1905 (Tenasserim).

DISTRIBUTION: Indo-Chinese Subregion (Burma).

HOST PREFERENCE: Hardly known, only recorded from *Megalaima* (Capitonidae, Piciformes).

69. *Lynchia tuberculata Ferr. 1927 (Palawan).

DISTRIBUTION: Malaysian Subregion (Palawan).

HOST PREFERENCE: Hardly known, only recorded from *Corvus* (Corvidae, Passeriformes).

(viii) **dioxyrhina**-group (*Icosta*)

70. *Lynchia bicorna Ferr. 1927 (Luzon).

DISTRIBUTION: Philippine Subregion.

HOST PREFERENCE: Hardly known, only recorded from *Penelopides* (Bucerotidae, Coraciiformes).

71. Lynchia dioxyrhina (Speis.) 1904.

†*Olfersia dioxyrhina* Speis. 1904 (NE New Guinea).

DISTRIBUTION: Papuan Subregion.

HOST PREFERENCE: Hardly known, only recorded from *Rhyticeros* (Bucerotidae, Coraciiformes.)

(ix) **longipalpis**-group

72. Lynchia longipalpis (Mcq.) 1835.

†*Olfersia longipalpis* Mcq. 1835 (Java).
†*Olfersia longirostris* Wulp 1897 (Ceylon).
**Lynchia majuscula* Beq. 1945 (Ceylon).

DISTRIBUTION: Malaysian, Indo-Chinese and Ceylonese Subregions.

HOST PREFERENCE: Little known, probably pleioxenous on Falconiformes. The only published definite record is from *Spilornis* (Accipitridae), but Doleschall (1856 Natuurk. Tijdschr. v. Nederl. Indie **10**: 414) stated to be "parasitica in avibus diversis."

(x) **meda**-group

73. *Lynchia meda Maa 1963 (Iraq).

DISTRIBUTION: Mediterranean Subregion (Iraq), probably spreading to the Oriental Region.

HOST PREFERENCE: Hardly known, only recorded from *Gyps* (Accipitridae, Falconiformes).

(xi) **nigrita**-group

73a. *Lynchia leptoptera Maa 1963 (Thailand).

DISTRIBUTION: Indo-Chinese Subregion (Thailand).

HOST PREFERENCE: Possibly monoxenous on *Microhierax* (Falconidae, Falconiformes).

73b. *Lynchia modesta Maa 1963 (Sumatra, S. Thailand).

DISTRIBUTION: Malaysian Subregion (Sumatra), spreading northward to S. Thailand.

HOST PREFERENCE: Possibly monoxenous on *Microhierax* (Falconidae, Falconiformes).

74. Lynchia nigrita (Speis.) 1905. n. comb.

**Olfersia nigrita* Speis. 1905 (Luzon).
Ornithoponus sartus* Ferr. 1925 (Samar I.). **New Synonymy.

DISTRIBUTION: Philippine Subregion.

HOST PREFERENCE: Little known, the only records are from *Microhierax* (Falconidae, Falconiformes) and *Hydrocorax* and *Buceros* (Bucerotidae, Coraciiformes).

(xii) Unplaced species

75. Lynchia parallelifrons (Speis.) 1902. n. comb.

†*Olfersia parallelifrons* Speis. 1902 (NE New Guinea).

DISTRIBUTION: Papuan Subregion.

HOST PREFERENCE: Unknown.

76. Lynchia rottensis (Statz) 1940.

Ornithoponus rottensis Statz 1940 (Germany).

DISTRIBUTION: Upper Oligocene in Germany.

HOST PREFERENCE: Unknown.

Genus **Pseudolynchia** Beq. 1926 (type: *maura* Bigot)

Distribution: Tropics and subtropics of the World. The *brunnea*-group is restricted to the New World. The *canariensis*-group is of Old World origin but one of its members is now practically cosmopolitan as a sequence of human agency.

Host preference: Polyxenous in members of the *canariensis*-group at their original home but confined to the domestic pigeons in the New World after being introduced there. There is not yet satisfactory explanation for this phenomenon. The only member of the *brunnea*-group is oligoxenous.

Systematics: Bequaert (1926, 1935, 1938, 1955) revised the genus several times. The 3 species listed below may be classified into 2 very weakly characterized groups.

KEY TO SPECIES-GROUPS OF PSEUDOLYNCHIA

Setulose area of wing posteriorly extending to vein 2A; cell *1m* bare at extreme base, otherwise uniformly setulose; recumbent hairs on prescutum only about as long as scutellum; face comparatively wider, about 2× as wide as eye in facial view. New World ..... **brunnea**-group

Setulose area of wing posteriorly far from reaching vein 2A; cell *1m* with a long bare strip near vein M_{3+4} in addition to small bare area at extreme base; recumbent hairs on prescutum more than 2× as long as scutellum; face comparatively narrower. Old World, now established in New World ..... **canariensis**-group

(i) **brunnea**-group

77. Pseudolynchia brunnea (Latr.) 1812.

†*Ornithomyia brunnea* Latr. 1812 ("Carolina"; *restricte*: S. Carolina).

DISTRIBUTION: New World, from Canada to Brazil and Argentina, sporadic.

HOST PREFERENCE: Oligoxenous, known from 6 genera of Caprimulgidae (Caprimulgiformes), with 1 stray record from Muscicapidae (Passeriformes).

(ii) **canariensis**-group

78. Pseudolynchia canariensis (Mcq.) 1840.

**Olfersia canariensis* Mcq. 1840 (Canary Is.).
**Olfersia testacea* Mcq. 1843 (Reunion Is.).
Olfersia rufipes* Mcq. 1847 (Reunion Is.). **New Synonymy.
Olfersia falcinelli* Rndn. 1879 (Malta I.). **New Synonymy.
Olfersia maura Bigot 1885 (Algeria).
**Olfersia lividicolor* Bigot 1885 (Brazil).
**Olfersia capensis* Bigot 1885 (Cape of Good Hope).

**Olfersia exornata* Speis. 1900 (Sumatra).
Lynchia simillima Speis. 1904 (Java).

DISTRIBUTION: Old World tropics and subtropics; introduced and now established in the New World.

HOST PREFERENCE: Polyxenous in the Old World, recorded from about 40 genera in Falconi-, Columbi-, Cuculi-, Strigi-, Passeri-, Galli-, Ciconii-, Caprimulgi- and Coraciiformes. Probably the first 3 or 4 of these 9 orders serve as true breeding hosts. Some of the records may have been confused with that of the next species. In the New World, *canariensis* is confined to the domestic pigeons.

79. Pseudolynchia garzettae (Rndn.) 1879.

**Olfersia garzettae* Rndn. 1879 (Italy).
Pseudolynchia fradeorum Tendeiro 1951 (Mozambique). **New Synonymy.**

DISTRIBUTION: Little known, probably widely spread over Palaeotropics, definitely recorded from the E. African and Mediterranean Subregions.

HOST PREFERENCE: Polyxenous, recorded from 13 genera in Strigi-, Caprimulgi-, Cuculi-, Charadrii-, Apodi-, Passeri- and Falconiformes. Apparently the first 2 orders are normal hosts for breeding and the remainder, stray records.

Genus **Microlynchia** Lutz 1915 (type: *pusilla* Speis.)

Distribution: Neotropical Region, extending to southern Nearctic Region.

Host preference: Little known; polyxenous in one of the species.

Systematics: Bequaert (1955) revised the genus and enumerated 4 species but did not attempt a natural grouping of them. They are here assigned to 2 groups.

Microlynchia was not recognized by Speiser (1908) who included his species *pusilla* in "*Lynchia*" [=*Pseudolynchia* in the present list]. The genus was placed by Bequaert (1954: 16) in his list of genera on the very top of his tribe Ornithomyini and to follow *Pseudolynchia*. Later in the revision of the American forms by the same author (1955: 364 *et seq.*), the systematic order of these 2 genera was reversed. However, the prominent metapleural processes, undefinable metabasisternal processes, simple hind scutellar margin and broad basal laterotergite in *Microlynchia* and *Olfersia* are somewhat similar, and the diamond-shaped metafurcasternum in the former genus is unknown to both *Lynchia* sen. Beq. and *Pseudolynchia*. Meanwhile, there are 2 median tergal plates (the 2nd is broadly interrupted at middle) in ♂ *Pseudolynchia*, but 1 in ♂ *Microlynchia*, although the shape and arrangement of these plates are sexually dimorphic in both genera. In line with features mentioned above, it appears more proper to place *Microlynchia* after, rather than before *Pseudolynchia*.

KEY TO SPECIES-GROUPS OF MICROLYNCHIA

Setulose area of wing extending posteriorly to vein 2A; metapleural process moderately developed; disc of abdominal venter with setae of uniform length and thickness ..... **pusilla**-group

Wing-setulae not extending posteriorly to vein 2A, thus leaving a bare strip at hind margin of cell *2m+1a*; metapleural lobes strongly developed; disc of abdominal

venter with both very long and very short setae ..... **galapagoensis**-group

(i) **pusilla**-group

80. *__Microlynchia crypturelli__ Beq. 1938 (Panama).

DISTRIBUTION: Brazilian Subregion (Panama, S. Brazil).

HOST PREFERENCE: Possibly monoxenous; on *Crypturellus* (Tinamidae, Tinamiformes).

Note: *M. crypturelli* is possibly a junior synonym of *M. pusilla* (see Bequaert 1955: 366).

81. *__Microlynchia furtiva__ Beq. 1955 (Brit. Honduras).

DISTRIBUTION: Mexican Subregion (Brit. Honduras).

HOST PREFERENCE: Hardly known; only recorded from *Crypturellus* (Tinamidae, Tinamiformes).

82. Microlynchia pusilla (Speis.) 1902.

**Lynchia pusilla* Speis. 1902 (Cuba).

DISTRIBUTION: Neotropical Region, widely spread, extending to the southern USA.

HOST PREFERENCE: Polyxenous; recorded from 25 genera in Columbi-, Galli-, Cuculi- Passeri-, Caprilmulgi- Falconi- and Tinamiformes. Probably the first 3 or 4 orders are true breeding hosts.

(ii) **galapagoensis**-group

83. *__Microlynchia galapagoensis__ Beq. 1955 (Galapagos Is.).

DISTRIBUTION: Galapagos Is.

HOST PREFERENCE: Hardly known; only recorded from *Nesopelia* (Columbidae, Columbiformes) and *Buteo* (Accipitridae, Falconiformes).

Genus **Olfersia** Wdm. 1830 (nec Say 1823) (type: *spinifera* Lch.)

Feronia Lch. 1817 (type: *spinifera* Lch.). nom. praeocc.
Pseudolfersia Coq.. 1899 (type: *maculata* Coq.).

Distribution: Pantropic, with sporadic records from the subtropics. One of the species spreads to temperate countries in the summer.

Host preference: All species show certain degree of host specificity and each has hosts belonging to a definite taxonomic or ecologic group.

Systematics: Containing 7 species which are here allotted to 3 groups. The following key is modified from Bequaert's (1933, 1957) revision of the genus.

As mentioned elsewhere in the paper, the authorship of the name *Olfersia* is to be reinvestigated and the species here included may go back to *Pseudolfersia.* The genus (*cf.* Table 1) was placed at the top of the subfamily by both Speiser (1908) and Bequaert (1954). The latter author even made it the sole representative of his tribe Olfersiini. While the facial structure apparently separates it from other genera of the subfamily, the vena-

tional scheme and the abdominal sclerotization seem to be more fundamental to divide the subfamily into 2 major groups (*cf.* Graph 2).

KEY TO SPECIES-GROUPS OF OLFERSIA WDM. NEC SAY

1. Vein M_{1+2} setose on both dorsal and ventral surfaces, cell *1bc* long, wide, distinctly bulging before apex; basal laterotergite of abdomen deeply notched at middle of hind margin in ♂, forming 2 submedian posterior lobes in ♀ ..... **sordida**-group
   Vein M_{1+2} entirely bare on both surfaces; cell *1bc* long, narrow, with apical 1/2 parallel-sided or nearly so; basal laterotergite in both sexes with hind margin nearly straight or broadly, evenly, concavely curved 2
2. Occipital margin deeply notched submedially, hence head strongly trilobed posteriorly; postorbit about as long as or scarcely shorter than greatest width of inner orbit; lower area of vertex alutaceous, upper smooth, separated from each other by a weak transverse depression ..... **spinifera**-group
   Occipital margin not or but weakly waving, head posteriorly not distinctly trilobed; postorbit much shorter than greatest width of inner orbit 3
3. Frontal process strongly protruding and almost as long as antenna; lower alutaceous area of vertex slightly smaller than upper smooth area ..... **coriacea**-group
   Frontal process inconspicuous, much shorter than antenna and hardly protruding beyond level of antennal apex; lower alutaceous area of vertex very small, only weakly developed at sides ..... **fossulata**-group

(i) **sordida**-group

84. *Olfersia sordida Bigot 1885 (Guatemala).

DISTRIBUTION: Neotropical Region, sporadic, with stray (?) records from the southern USA.

HOST PREFERENCE: Pleioxenous; recorded from 3 genera of Phalacrocoracidae and Pelecanidae (Pelecaniformes); with 1 stray record from Strigiformes.

(ii) **coriacea**-group

85. Olfersia coriacea Wulp 1903.

**Olfersia coriacea* Wulp 1903 (pt., excl. paratype) (Guatemala).
Pseudolfersia meleagridis Lutz 1915 (Brazil).

DISTRIBUTION: Continental Neotropical Region, widely spread.

HOST PREFERENCE: Pleioxenous; known from 5 genera in Galliformes, particularly Cracidae; with stray records from Tinami- and Ciconiiformes (1 genus each).

(iii) **fossulata**-group

86. Olfersia bisulcata Mcq. 1847.

**Olfersia mexicana* Mcq. 1843 (pt. of paratypes only) (Mexico).
**Olfersia bisulcata* Mcq. 1847 (Chile).
**Olfersia vulturis* Wulp 1903 (Costa Rica).

DISTRIBUTION: Continental Neotropical Region, widely spread.

HOST PREFERENCE: Oligoxenous; known from 4 genera of Cathartidae (Falconi-

formes).

87. *__Olfersia fossulata__ Mcq. 1843 (Brazil).

DISTRIBUTION: Neotropical Region, sporadic, ranging from Panama and Puerto Rico to northern Chile and the Galapagos Is.; also stray records from the Philippine and Wallacea Subregions (Wetter I.) in the Oriental Region.

HOST PREFERENCE: Polyxenous; on Pelecaniformes (Phalacrocoracidae, Sulidae, Pelecanidae); occasionally on Charadriiformes; with 1 stray record from Strigiformes. Altogether 6 bird-genera are involved.

88. Olfersia fumipennis (J. Sahlb.) 1886.

*_Lynchia fumipennis_ J. Sahlb. 1886 (Finland).
*_Pseudolfersia maculata_ Coq. 1899 (Wisconsin).
Pseudolfersia mycetifera Speis. 1905 (Senafir I. in Red Sea).

DISTRIBUTION: New World, widely spread; Old World, sporadic and only recorded from Finland, Russia (Walowiki), Red Sea and Sumba I.

HOST PREFERENCE: Monoxenous; confined to _Pandion haliaetus_ Linn. (Pandionidae, Falconiformes), with stray records from Gaviiformes and other Falconiformes. Altogether 4 bird-genera are involved.

(iv) **spinifera**-group

89. Olfersia aenescens C. G. Thms. 1869.

*_Olfersia aenescens_ C. G. Thms. 1869 (Keeling I. in Indian Ocean).
*_Olfersia erythropsis_ Bigot 1885 (New Caledonia).
*_Pseudolfersia diomedeae_ Coq. 1901 (Galapagos Is.).

DISTRIBUTION: Pantropic in the Pacific, Atlantic and Indian Oceans.

HOST PREFERENCE: Polyxenous; on Pelecaniformes (Phaethontidae, Sulidae), less often on Procellariiformes (Diomedeidae, Procellariidae) and Charadriiformes (Laridae). Altogether 7 bird-genera are involved.

90. Olfersia spinifera (Lch.) 1817.

[_Hippobosca nigra_ Osbeck 1757 (Ascension I.)]. nom. nud.
[_Ornithomyia pelecani-piscatoris_ Olf. 1816, n. name for _nigra_ Osbeck]. nom. nud.
*_Feronia spinifera_ Lch. 1817 (no locality; _restricte_ (neotype): Laysan I. nr. Hawaii).
*_Ornithomyia unicolor_ Wk. 1849 (Jamaica).
*_Olfersia courtilleri_ Courtiller 1853 (France).
*_Olfersia sulcifrons_ C. G. Thms. 1869 (Panama).

DISTRIBUTION: Pantropic in the Pacific, Atlantic and Indian Oceans.

HOST PREFERENCE: Monoxenous; restricted to _Fregata_ (Fregatidae, Pelecaniformes), seldom on _Pelecanus_ and _Phalacrocorax_ of the same order.

Subfamily ORTHOLFERSIINAE Beq. 1942

Distribution: Australotasmanian Subregion and southern part of Papuan Subregion.

Host preference: Restricted to Macropodidae, Marsupialia. Most of the species are monoxenous.

Systematics: Paramonov (1954) and Maa (1962) revised the 2 genera and 5 species

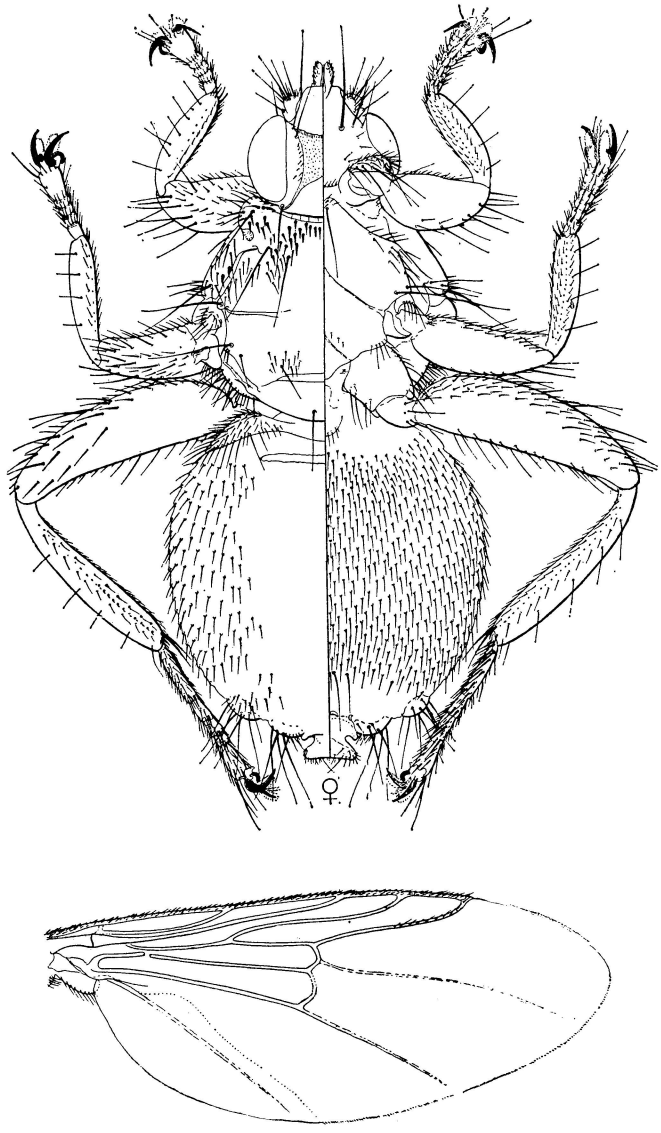


Fig. 5. *Ortholfersia macleayi* (Lch.), ♀, with left and right halves of the figure representing dorsal and ventral aspects respectively and with wing detached and placed at the bottom. (After Ferris 1924 Amer. Mus. Novit. **110**: 4-5, originally labeled as *O. raveni* Ferr.)

of the subfamily. It was included in the Olfersiinae and placed at the very beginning of the entire family by Speiser (1908). In 1942, Bequaert recognized it as an independent subfamily and placed after Hippoboscinae and Alloboscinae. As mentioned elsewhere in this paper, the Alloboscinae are obviously the most highly specialized of these 3 subfamilies, and hence should not be placed before Ortholfersiinae. Bequaert (*l. c.*) distinguished Hippoboscinae from Ortholfersiinae by that the antennal pits are open, not closed; 1st antennal segment fused with, not separated from lunula; humeral calli not prominent, instead of slightly projecting; pronotum well developed, not invisible dorsally; and calypteres distinct, not rudimentary. To the above enumerated, the non-setulose wings, non-striate abdominal dorsum, less reduced abdominal plates and much shortened R_{2+3} may be added. All these except the relative size of the pronotum and calypteres, seem to advocate the relative primitiveness of Ortholfersiinae versus Hippoboscinae and to fit the general evolutionary pattern within this family. By implication of the host-parasite parallelism in evolution, the former subfamily is to be placed first too.

Genus **Ortholfersia** Speis. 1902 (type: *phaneroneura* Speis.)

Distribution: Australotasmanian Subregion from SE Queensland to Tasmania.

Host preference: Same as in the subfamily.

Systematics: The genus contains 4 species and is divisible into 2 species-groups.

KEY TO SPECIES-GROUPS OF ORTHOLFERSIA

Wing-membrane bare, thin and clear transparent; antennal pit in profile almost truncate anteriorly ..... **minuta**-group

Wing-membrane not clear transparent, but leathery, densely setulose on both surfaces except narrow strip along free margin of cell *2a*; antennal pit in profile more or less snout-like..... **macleayi**-group

(i) **macleayi**-group

91. ***Ortholfersia bequaerti** Maa 1962 (SE Queensland).

DISTRIBUTION: SE Queensland.

HOST PREFERENCE: Oligoxenous, on *Protemnodon* and *Thylogale.*

92. Ortholfersia phaneroneura Speis. 1902.

†*Ortholfersia phaneroneura* Speis. 1902 (N. S. Wales).
**Hippobosca tasmanica* Wesché 1903 (Tasmania).

DISTRIBUTION: SE Queensland to Tasmania.

HOST PREFERENCE: Monoxenous, on *Protemnodon.*

93. Ortholfersia macleayi (Lch.) 1817.

†*Feronia macleayi* Lch. 1817 (N. S. Wales).
**Ortholfersia raveni* Ferr. 1924 (N. S. Wales).

DISTRIBUTION: SE Queensland to Tasmania.

HOST PREFERENCE: Monoxenous, on *Protemnodon.*

(ii) **minuta**-group

94. Ortholfersia minuta Param. 1954 (SE Queensland).

DISTRIBUTION: SE Queensland.

HOST PREFERENCE: Hardly known, only recorded from "kangaroo."

Genus **Austrolfersia** Beq. 1953 (type: *ferrisi* Beq.)

Distribution: Papuan Subregion (N. Queensland).

Host preference: Mono- or oligoxenous, on *Thylogale* and (?) *Eepyprymnus.*

Systematics: Containing only 1 species. The genus is separable from *Ortholfersia* chiefly in the reduction of wing-veins and body-setae which indicates its higher systematic position than in the latter genus.

95. *Austrolfersia ferrisi Beq. 1953 (N. Queensland), n. name for "*tasmanica* Wesché" of Ferris 1924.

DISTRIBUTION & HOST PREFERENCE: Same as in the genus.

Subfamily HIPPOBOSCINAE (Samouelle) 1819

Distribution: Old World, largely Ethiopian, absent in the Australian Region. One of the species introduced and now established nearly throughout the Old World.

Host preference: Nearly all species are mono- or oligoxenous. On domestic and wild mammals (Carnivora, Artiodactyla, Perissodactyla) and ostriches.

Systematics: The subfamily was revised twice by Bequaert (1931, 1939b), who recognized only 1 genus. A second genus is here added to accommodate the single species *struthionis* which is confined to the ostriches and has similar leg-structure as in *Neolipoptena* Beq.

Genus **Struthiobosca** Maa 1963 (type: *struthionis* Jans.) (see p. 80)

Distribution: S. and E. African Subregions, northward to Kenya and Tanganyika.

Host preference: Monoxenous, on *Struthio camelus* Linn. (Struthionidae, Struthioniformes).

Systematics: Containing only the type species, which was placed by Bequaert near the top of the subfamily and stated by him to be closely related to the *Hippobosca variegata*-group. But the feathered empodia and the very weak sexual dimorphism seem to indicate *Struthiobosca* relatively more primitive than *Hippobosca* s. s.

96. Struthiobosca struthionis (Jans.) 1889. n. comb.

**Hippobosca struthionis* Jans. 1889 (Cape of Good Hope).
**Hippobosca struthionis* var. *massaica* Speis. 1909 (Tanganyika).

DISTRIBUTION & HOST PREFERENCE: Same as in the genus.

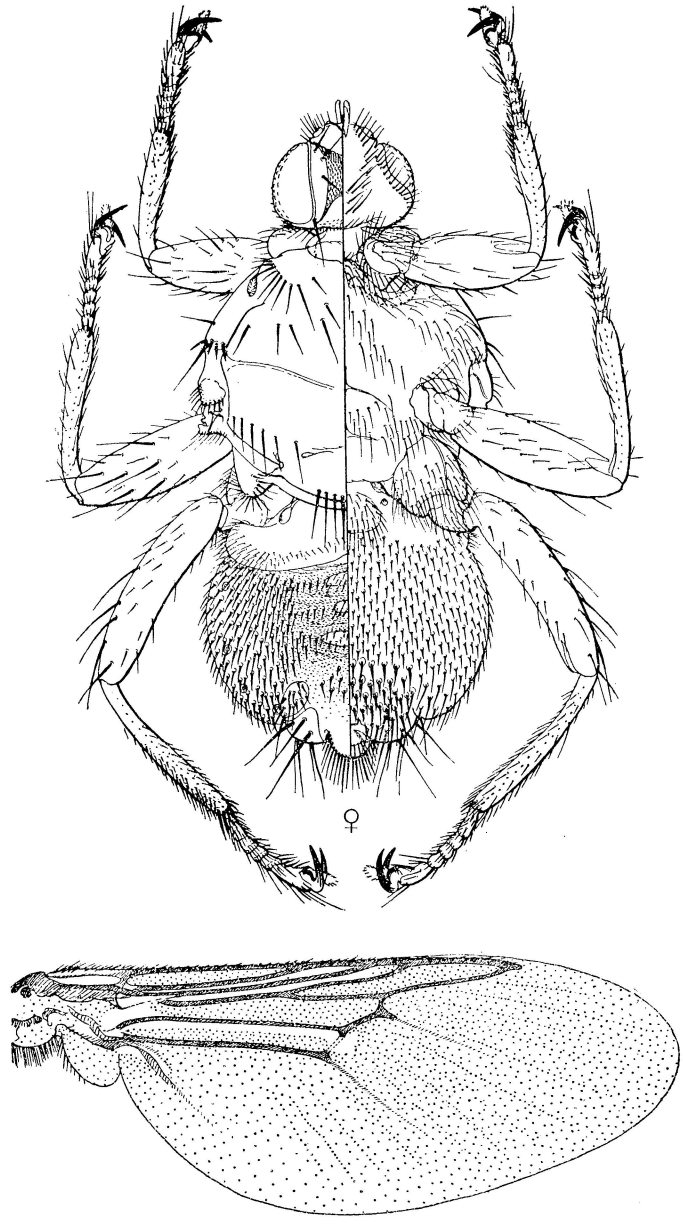


Fig. 6. *Hippobosca equina* Linn., ♀, with left and right halves of the figure representing dorsal and ventral aspects respectively and with wing detached and placed at the bottom. (After Ferris 1930 Philipp. J. Sci. **43**: 540–41).

Genus **Hippobosca** Linn. 1758 (type: *equina* Linn.).

Hippobosca subgen. *Nirmomyia* Ntz. 1818 (type: *equina* Linn.).
Zoomyia Bigot 1885 (type: *equina* Linn.).

Distribution: Same as in the subfamily.

Host preference: Most species are oligoxenous. On Carnivora, Artiodactyla and Perissodactyla.

Systematics: As suggested by Bequaert (1939b: 72), the 7 species listed below fall into 3 fairly well defined groups.

KEY TO SPECIES-GROUPS OF HIPPOBOSCA

1. All legs with no pad-like pulvilli; head with 2 or 3 pairs of vertical bristles; ♀ abdomen with no, ♂ with 3 median tergal plates; vein *im* about as long as its distance to *rm*; R_{2+3} shorter than last abscissa of R_{4+5}; R_{4+5} entirely bare on both surfaces ..... **camelina**-group
   First 2 or all 3 pairs of legs each with 1 or 2 well developed pad-like pulvilli; only 1 pair of vertical bristles; number of median tergal plates (either none or 3) alike in both sexes 2
2. Abdomen with 3 median tergal plates in both sexes; inner pulvilli all conspicuous and about 1/2 as long as their corresponding outer pulvilli which are fully developed in all legs; vein R_{4+5} entirely bare on both surfaces, its last abscissa about as long as or shorter than full length of R_{2+3}; apex of R_{2+3} not more than 3× as far from apex of R_{4+5} as from apex of R_1 ..... **equina**-group
   Abdomen with no median tergal plates in both sexes: inner pulvilli all vestigial; outer pulvilli fully developed in 1st 2 pairs of legs, very weakly so in hind pair; vein R_{4+5} dorsally setose near base, its last abscissa longer than full length of R_{2+3}; apex of R_{2+3} not less than 5× as far from apex of R_{4+5} as from apex of R_1 ..... **variegata**-group

(i) **equina**-group

97. Hippobosca equina Linn. 1758.

†*Hippobosca equina* Linn. 1758 ("Europe, N. America"; *restricte*; Sweden).
**Hippobosca taurina* Rndn. 1879 (C. Italy).

DISTRIBUTION: Palaearctic and western part of Oriental Regions; introduced and now established in the Fiji, New Caledonia, New Hebrides and Molucca Is.

HOST PREFERENCE: Monoxenous; normally breeding on domestic *Equus* (horses, donkeys, asses) (Equidae); facultative host domestic cattle; with stray records from domestic dogs, rabbits, domestic pigs, camels and birds.

98. Hippobosca fulva Austen 1912.

**Hippobosca fulva* Austen 1912 (NE Rhodesia).
†*Hippobosca martinaglia* Bedf. 1936 (Swaziland in S. Africa).

DISTRIBUTION: S. African Subregion.

HOST PREFERENCE: Oligoxenous; on *Aepyceros*, *Strepsiceros* and *Alcelaphus* (all

Antilopinae, Bovidae).

99. Hippobosca longipennis Fabr. 1805.

Hippobosca longipennis Fabr. 1805 (Tranquebar).
**Hippobosca capensis* Olf. 1816 (Cape of Good Hope).
**Hippobosca francilloni* Lch. 1817 (no locality; *restricte*: India).
**Hippobosca orientalis* Mcq. 1843 (India).
[*Hippobosca laticornis* Mcq. 1843] *lapsus calami.*
Hippobosca fossulata* Mcq. 1843 ("Brazil or Chile"; *recte*: India). **New Synonymy.
**Ornithomyia chinensis* Giglioli 1864 (Fukien).
**Hippobosca canina* Rndn. 1878 ("Italy, E. Iran, S. Europe, S. Africa, E. Africa"; *restricte*: Italy).
[*Hippobosca cunicosa* (Madarasz *in litt.*) Thalh. 1899 (Hungary)]. nom. nud.
Hippobosca equina var. *canina* Dryensky 1926 (Bulgaria). nom. praeocc.

DISTRIBUTION: Ethiopian (excl. W. African Subregion), Oriental (western pt.) and Palaearctic (southern pt.) Regions.

HOST PREFERENCE: Polyxenous, normally breeding on Canidae (*Canis, Vulpes*), Viverridae (*Viverra*), Hyaenidae (*Crocuta, Hyaena*) and Felidae (*Acinonyx, Felix, Panthera*); facultative hosts Bovidae (*Cephalophus, Madoqua*); with stray records from mule etc.

(ii) **camelina**-group

100. Hippobosca camelina Lch. 1817.

**Hippobosca camelina* Lch. 1817 (Egypt).
†*Hippobosca camelina* Duf. 1858 (Algeria). nom. praeocc.
**Hippobosca bactriana* Rndn. 1878 (Iran, Eritrea; *restricte*: Eritrea).
**Hippobosca dromedarina* Speis. 1902 (N. Africa), n. name for "*camelina* Lch." of Rondani (1878, 1879) in part.

DISTRIBUTION: Mediterranean and northern part of E. African Subregions.

HOST PREFERENCE: Monoxenous; on *Camelus* (Camelidae).

(iii) **variegata**-group

101. Hippobosca hirsuta Austen 1911.

**Hippobosca hirsuta* Austen 1911 (Uganda).
**Hippobosca hirsuta* var. *neavei* Austen 1911 (NE Rhodesia).

DISTRIBUTION: E. African Subregion.

HOST PREFERENCE: Oligoxenous; on *Kobus* (Hippotraginae, Bovidae) and related antelopes.

102. Hippobosca rufipes Olf. 1816.

**Hippobosca rufipes* Olf. 1816. (Cape of Good Hope).
**Hippobosca maculata* Mcq. 1835 (pt., excl. var. from Senegal) (Cape of Good Hope). nom. praeocc.
**Hippobosca albo-maculata* Mcq. 1855 ("Cap des Aiguilles in Oceania"; *recte*: Cape Agulhas nr. Cape of Good Hope).

Hippobosca albonotata Rndn. 1863 (S. Africa).
**Hippobosca wahlenbergiana* Jaenn. 1867 (S. Africa).
[*Hippobosca marginata* (Mcq. *in litt.*) Wulp 1894]. nom. nud. (? err. for *maculata*).
Hippobosca camelopardalis Rbd. 1925 (Tanganyika).

DISTRIBUTION: S. African Subregion, now gradually spreading northward through human agency.

HOST PREFERENCE: Monoxenous; normally breeding on domestic *Equus* (horses etc.) (Equidae); facultative hosts *Giraffa* (Giraffidae), *Bos* (domestic cattle), *Taurotragus* (both Bovinae, Bovidae), *Connochaetes* (Hippotraginae, Bovidae), *Rhaphicerus* and *Antidorcas* (both Antilopinae, Bovidae).

103. Hippobosca variegata Megerle 1803.

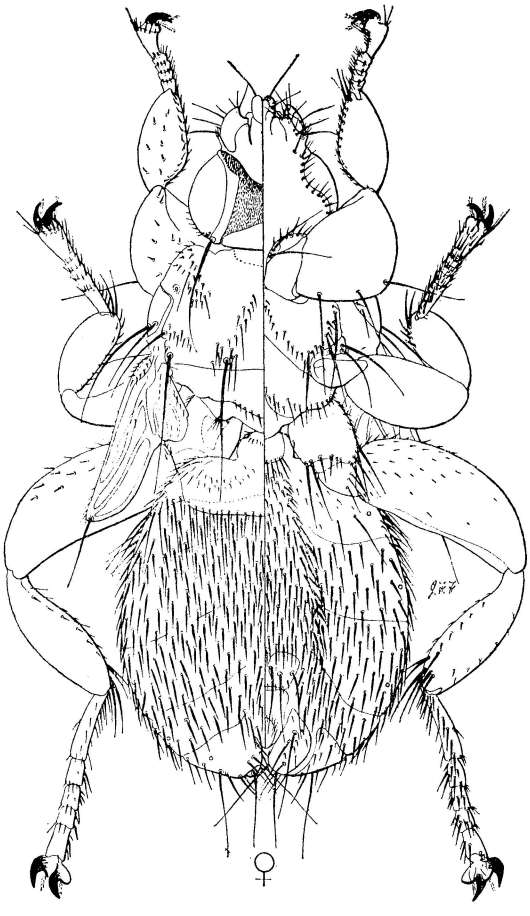


Fig. 7. *Allobosca crassipes* Speis., ♀, with left and right halves of the figure representing dorsal and ventral aspects respectively (After Ferris & Cole 1922 Parasitology **14**: 190).

†*Hippobosca variegata* Megerle 1803 (Bengal).
**Hippobosca maculata* Lch. 1817 ("E. Indies"; *restricte*: Bengal).
Hippobosca maculata* var. (sine nom.) Macquart 1835 (Senegal). **New Synonymy.
**Hippobosca bipartita* Mcq. 1843 (Bengal).
†*Hippobosca aegyptiaca* Mcq. 1843 (Egypt).
**Hippobosca sudanica* Bigot 1884 (E. Sudan)
**Hippobosca sivae* Bigot 1885 ("E. Indies"; *restricte*: India).
**Hippobosca calopsis* Bigot 1885 (Ceylon).
**Hippobosca aegyptiaca* var. *bengalensis* Ormerod 1895 (Bengal).

DISTRIBUTION: Palaeotropics, spreading sparingly northward to Mediterranean Subregion and eastward (introduced) to Timor and Celebes. Tropical Africa is probably the original center of distribution.

HOST PREFERENCE: Pleioxenous; normally breeding on domestic *Equus* (horses, etc.) (Equidae) and *Bos* (cattle) (Bovinae, Bovidae); facultative hosts *Bubalus* (domestic water buffalo) (Bovinae, Bovidae) and *Camelus* (Camelidae).

Subfamily ALLOBOSCINAE Speis. 1908

Distribution: Malagasy Region.

Host preference: Restricted to Lemuridae (*Lemur*, *Lepilemur*) and Indriidae (*Avahi*, *Prohithecus*), Primates.

Systematics: Containing only 1 genus and 1 species. Both Speiser (1908) and Bequaert (1954) placed the subfamily immediately subsequent to the Hippoboscinae (*cf.* Table 1). The incrassate legs, abnormal venation, spatulate setae on fore tarsi, large pregenital plate in ♂, reduced spiracles as well as the restricted host and geographic ranges are uncomparable to other subfamilies. Although they show some affinities to Lipopteninae, the Alloboscinae have long been isolated from their relatives and must be placed at the top of the noncaducous forms.

Genus **Allobosca** Speis. 1899 (type: *crassipes* Speis.)

Distributions & systematics: Same as in the subfamily.

Host preference: Bequaert (1953a: 320) classified *Allobosca crassipes* as pleioxenous and suggested "probably more widely spread among these 2 families [Lemuridae and Indriidae]." The subfamily has been very little collected and it is not impossible that the genus contains more than 1 species and the species are oligoxenous.

104. Allobosca crassipes Speis. 1899 (Madagascar).

DISTRIBUTION & HOST PREFERENCE: As in the subfamily.

Subfamily LIPOPTENINAE Speis. 1908

Synonym: Melophaginae Bezzi 1915, Bequaert 1942.

Distribution: Nearly world-wide. As a sequence of human agency, one of the species is now almost cosmopolitan and a second one occurs in both hemispheres. All remaining species are rather localized in distribution. Of the 3 genera here listed, 1 is world-wide, the

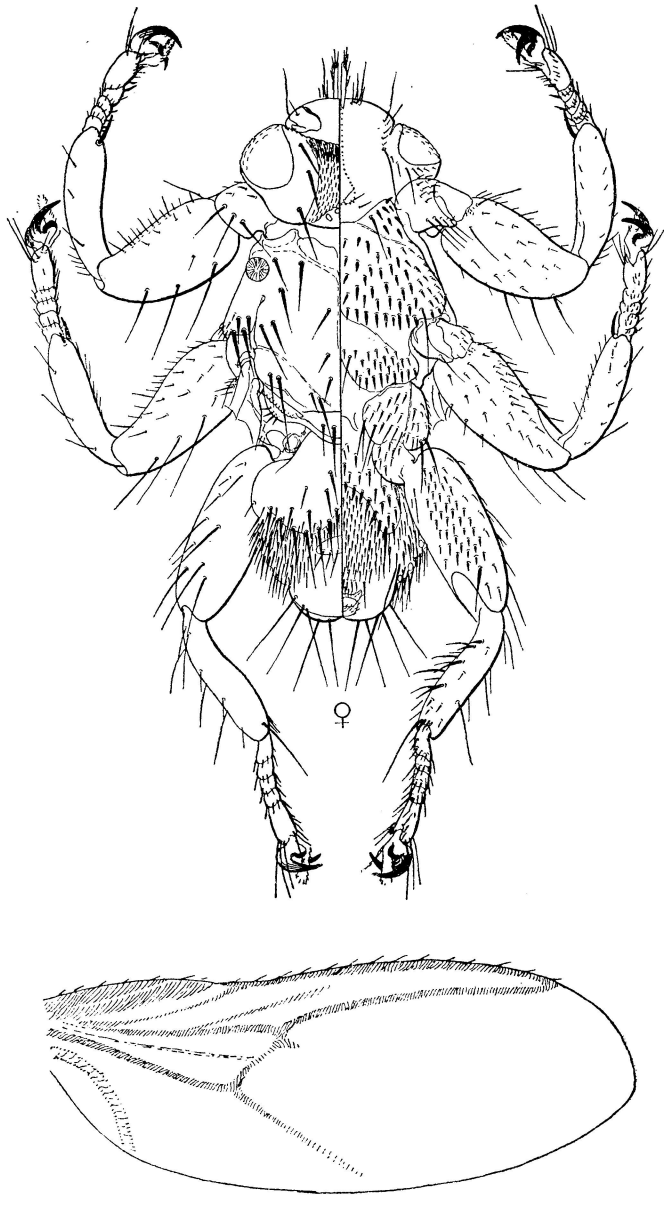


Fig. 8. *Lipoptena rusaecola* Beq., ♀, with left and right halves of the figure representing dorsal and ventral aspects respectively and with wing detached and placed at the bottom. (After Ferris 1930 Philipp. J. Sci. **43**: 549, 551, originally labeled as *Lipoptena* sp. indet.).

other 2 are restricted to the Palae- and Nearctic Regions respectively.

Host preference: All species are mono- or oligoxenous, normally breeding on Artio-

dactylous mammals (Bovidae, Cervidae, Tragulidae). The host specificity in this subfamily is more pronounced than in others, but there appears no evidence of host-parasite parallelism in evolution.

Systematics: Bequaert (1942a) monographed the subfamily and divided it into 2 tribes and 4 genera. To conform with the classificatory system of other subfamilies, the tribal names are not used here and the genus *Echestypus* as well as subgenera *Lipoptenella* and *Dorcadophagus* are listed as species-groups. Because of the shortened palpi and antennae, strongly flattened body, vestigial or caducous (and reduced venation) state of wings, absence of halteres in certain forms and more departure in appearance from ordinary flies, the subfamily has long been considered as the most highly specialized in the family.

Genus **Lipoptena** Ntz. 1818 (type: *cervina* Ntz.)

Haemobora Curt. 1824 (type: *pallipes* Curt.).
Ornithobia Meig. 1830 (type: *pallida* Meig.).
Alcephagus Gimm. 1845 (type: *pallida* Meig.), n. name for *Ornithobia* Meig.
Echestypus Speis. 1907 (type: *sepiacea* Speis.).
Lipoptena subgen. *Lipoptenella* Beq. 1942 (type: *depressa* Say).

Distribution: Nearly world-wide. The *cervi*-group is of Old World origin with one of its members introduced and now established in the New World; the *sepiacea*-group, restricted to the Ethiopian Region; and the *depressa*-group, chiefly New World with 1 species found in the Oriental Region.

Host preference: The *cervi*-group is restricted to Bovidae and Cervidae, notably Caprinae of the former and Cervinae of the latter; the *sepiacea*-group, restricted to Bovidae, notably Antilopinae; and the *depressa*-group, restricted to the Odocoileinae, Cervidae in the New World and to the Tragulidae in the Oriental Region.

Systematics: Containing 17 species which are here allotted to 3 groups. The latter were recognized by Bequaert (1942) as 2 independent genera and with one of them subdivided into 2 subgenera. As shown in the following key, the *sepiacea*-group (or the "genus" *Echestypus*) is apparently less distinctive than the 2 others and its degradation seems quite natural. It stands much closer to the *cervi*-group than does the latter to the *depressa*-group which shows affinities to *Neolipoptena*. The degree of the abdominal segmentation clearly serves as an easy indicator for their relative antiquity as it is parallel to the development of ♂ genitalia and of false pterostigmata in the afore-mentioned 4 groups. On the other hand, the absence of ocelli and relative brevity of palpi, long reputed to be the criteria of *Echestypus*, are of little importance to indicate relationships. Hence the placing of "*Echestypus*" after *Lipoptena* by Speiser (1908) and Bequaert (*l. c.*) seems to be not quite natural.

KEY TO SPECIES-GROUPS OF LIPOPTENA

1. Median tergal plates weakly defined, all (as well as their corresponding spiracles) aggregated at posterior 1/3 of abdomen; dorsal part of 2nd pleurum (laterite) extending much beyond midlength of abdomen, strongly narrowed apicad and with acute apex; 3rd and following pleura entirely unrecognizable; costa apically stigma-like; ocelli present; legs short, robust; palpus generally about as long as frons

..... **depressa**-group

Median tergal plates well defined, rather evenly distributed over abdominal dorsum, their corresponding spiracles also rather evenly interspaced; dorsal part of 2nd pleurum with blunt apex, not extending beyond midway of abdomen; 3rd and 4th pleura, either separated or amalgamated together, at least well defined dorsally; costa normal, without conspicuous apical thickening 2

2. Dorsal part of 2nd pleurum hardly narrowed apicad; 3rd and 4th pleura amalgamated together (hence with 2 spiracles at a side), dorsally much more definable than ventrally; 5th pleura poorly defined; legs short, robust, with fore and hind pairs subequal in robustness; ocelli present; palpus varying in length but never vestigial ..... **cervi**-group

Dorsal part of 2nd pleurum distinctly narrowed apicad; 3rd to 5th pleura all well separated and well defined both dorsally and ventrally, each with 1 spiracle at a side; legs long, slender, with hind pair distinctly thinner than fore pair; ocelli absent; palpus either vestigial or only about 1/2 as long as frons.....**sepiacea**-group

(i) **sepiacea**-group (*Echestypus*)

105. Lipoptena binocula (Speis.) 1908. n. comb.

Lipoptena sepiacea* Speis. 1905 (pt., paratype only) (Caffraria). **New Synonymy.
**Echestypus binoculus* Speis. 1908 (Bechuanaland).

DISTRIBUTION: S. African Subregion.

HOST PREFERENCE: Oligoxenous; on *Raphicerus* and *Antidorcas* (Antilopinae, Cervidae).

106. Lipoptena paradoxa Newst. 1907.

**Lipoptena paradoxa* Newst. 1907 (Febr.) (Congo).

**Echestypus parvipalpis* Speis. 1907 (April) (Tanganyika).

DISTRIBUTION: Ethiopian Region, widely spread in savanna and plains.

HOST PREFERENCE: Oligoxenous; on *Tragelaphus* (Bovinae) and *Sylvicapra* (Cephalophinae), both of Bovidae.

107. Lipoptena sepiacea Speis. 1905 (pt., excl. paratype from Caffraria) (Kenya).

DISTRIBUTION: W. and E. African Subregions.

HOST PREFERENCE: Oligoxenous; on *Tragelaphus* (Bovinae), *Cephalophus* (Cephalophinae), *Oryx* (Hippotraginae) and *Ourebia* (Antilopinae), all of Bovidae.

(ii) **cervi**-group (*Lipoptena* s. s.)

108. Lipoptena capreoli Rndn. 1878.

**Lipoptena capreoli* Rndn. 1878 (Cyprus).
**Lipoptena caprina* Austen 1921 (Palestine, Macedonia).

DISTRIBUTION: Mediterranean Subregion (Dalmatia to NW India).

HOST PREFERENCE: Monoxenous; on *Capra hircus* Linn. (domestic goat; Caprinae, Bovidae).

109. Lipoptena cervi (Linn.) 1758.

†*Pediculus cervi* Linn. 1758 (no locality; *restricte*: Sweden).
Hippobosca moschi* Pallas 1777 (Transbaikalia). **New Synonymy.
†*Hippobosca cervi* A. G. Oliv. 1792 (no locality; *restricte*: France).
†*Melophaga trifasciata* Olf. 1816 (no locality; *restricte*: Germany).
[*Pediculus capreoli* Olf. 1816 (Germany), n. name for Frisch's species, in synonymy].
†*Hippobosca* (*Lipoptena*) *cervina* Nitz. 1818 (no locality; *restricte*: Germany).
†*Haemobora pallipes* Curt. 1824 (England).
**Ornithobia pallida* Meig. 1830 (Europe).
Melophaga moschi* Wdm. 1830 ("S. Russia"; *recte*: Transbaikalia). **New Synonymy.
Ornithomyia nigrirostris Roser 1840 (Germany).
**Lipoptena alcis* Schnabl 1881 (Lithuania).
[*Lipoptena cervi* var. *obscura* ("Rörig *in litt.*) Lühe 1906]. nom. nud.
**Lipoptena subulata* Coq. 1907 (New Hampshire).

DISTRIBUTION: Palaearctic Region, eastward to N. China; introduced and now established in the Nearctic Region. The record of its establishment in S. Africa needs confirmation.

HOST PREFERENCE: Oligoxenous; on *Moschus* (Moschinae), *Cervus* (Cervinae), *Capreolus* and *Alces* (Odocoileinae) in the Palaearctic Region and on *Cervus* and *Odocoileus* in the Nearctic. All these genera are of Cervidae. Stray records are from Equidae (*Equus*, domestic horses, etc.), Bovidae (*Bos* or domestic cattle, *Boselaphus*), Mustelidae (*Meles*) and man.

110. Lipoptena chalcomelaena Speis. 1904.

**Lipoptena chalcomelaena* Speis. 1904 (Sinai Penin.).
[*Lipoptena hirta* (Loew *in litt.*) Speis. 1905 (Egypt)]. nom. nud.
**Lipoptena ibicis* Theob. 1906 (Sudan).

DISTRIBUTION: Mediterranean Subregion (Sinai Penin., Nubia Mts.).

HOST PREFERENCE: Monoxenous; on *Capra nubiana* F. Cuvier (Caprinae, Bovidae).

111. *Lipoptena couturieri Séguy 1935 (Spanish Pyreenes).

DISTRIBUTION: Mediterranean Subregion (Pyreenes).

HOST PREFERENCE: Monoxenous; on *Rupicapra rupicapra* Linn. (Rupicaprinae, Bovidae).

112. *Lipoptena efovea Speis. 1905 (Ceylon).

DISTRIBUTION: Ceylonese Subregion (Ceylon).

HOST PREFERENCE: Oligoxenous; on Cervinae (*Cervus*) and Muntiacinae (*Muntiacus*), both of Cervidae; with stray records on Felidae (*Panthera*).

113. Lipoptena grahami Beq. 1942.

**Lipoptena* (*Lipoptena*) *grahami* Beq. 1942 (Szechwan).

DISTRIBUTION: Indo-Chinese Subregion (Szechwan).

HOST PREFERENCE: Unknown.

114. Lipoptena hopkinsi Beq. 1942.

**Lipoptena* (*Lipoptena*) *hopkinsi* Beq. 1942 (Uganda, Kenya, Congo).

DISTRIBUTION: E. African Subregion, extending to eastern part of W. African Subregion.

HOST PREFERENCE: Oligoxenous; on Cephalophinae (*Cephalophus*), Antilopinae (*Nesotragus*) and Bovinae (*Tragelaphus*), all of Bovidae.

115. Lipoptena japonica Beq. 1942.

**Lipoptena* (*Lipoptena*) *japonica* Beq. 1942 (Japan).

DISTRIBUTION: Manchurian Subregion (Japan).

HOST PREFERENCE: Monoxenous; on *Capricornis crispus* Temm. (Caprinae, Bovidae).

116. Lipoptena pauciseta Edw. 1919.

(?)†*Lipoptena pteropi* Denny 1843 (E. Indies).
**Lipoptena pauciseta* Edw. 1919 (Sumatra).

DISTRIBUTION: Indo-Chinese (SW China, Thailand, Vietnam) and Malaysian (Sumatra) Subregions.

HOST PREFERENCE: Monoxenous; on *Mutiacus muntjak* Zimm. (Muntiacinae, Cervidae).

117. Lipoptena rusaecola Beq. 1942.

**Lipoptena* (*Lipoptena*) *rusaecola* Beq. 1942 (Mindanao, Luzon).

DISTRIBUTION: Philippine Subregion.

HOST PREFERENCE: Monoxenous; on *Cervus unicolor* Bechst. (Cervinae, Cervidae).

(iii) **depressa**-group (*Lipoptenella*)

118. Lipoptena depressa (Say) 1823.

**Melophagus depressus* Say 1823 ("USA"; *restricte*: betw. Arkansas and Rocky Mts.)

DISTRIBUTION: Californian and Rocky Mts. Subregions.

HOST PREFERENCE: Monoxenous; on *Odocoileus* (Odocoileinae, Cervidae); with stray records on *Cervus canadensis* Erxleben.

119. Lipoptena gracilis Speis. 1903.

**Lipoptena gracilis* Speis. 1903 (Peninsular Thailand).
**Lipoptena traguli* Ferr. & Cole 1922 (Lingga Arch., Riouw Arch.).

DISTRIBUTION: Malaysian Subregion.

HOST PREFERENCE: Monoxenous; on *Tragulus javanicus* Osbeck (Tragulidae).

120. Lipoptena guimaraesi Beq. 1957.

**Lipoptena* (*Lipoptenella*) *guimaraesi* Beq. 1957 (Brazil).

DISTRIBUTION: Brazilian Subregion (S. Brazil).

HOST PREFERENCE: Monoxenous; on *Ozotoceros bezoarticus* J. E. Gray (Odocoi-

leinae, Cervidae).

121. Lipoptena mazamae Rndn. 1878.

**Lipoptena mazamae* Rndn. 1878 ("C. and S. America"; *restricte*: Mexico).
**Lipoptena depressa* var. *mexicana* Twnd. 1897 (Mexico).
†*Lipoptena conifera* Speis. 1905 (Brazil).
**Lipoptena surinamensis* Bau 1930 ("Surinam: Macaraibo"; *recte*: Surinam, Paramaribo).
[*Leptotena cubensis* (Lch. *in litt.*) Maa 1962 (Cuba).] nom. nud.

DISTRIBUTION: Neotropical Region, widely spread.

HOST PREFERENCE: Oligoxenous; on *Odocoileus* and *Mazama* (Odocoileinae, Cervidae).

Genus **Neolipoptena** Beq. 1942 (type: *ferrisi* Beq.)

DISTRIBUTION: Californian Subregion.

HOST PREFERENCE: Confined to Odocoileinae (Cervidae).

SYSTEMATICS: Containing 1 species. Based upon the structure of fore coxae and ♂ genitalia, the sclerotization of the abdomen, and limits of the geographic range, *Neolipoptena* is apparently more advanced than *Lipoptena*. These 2 genera were however arranged in a reverse order by Bequaert (1942a).

122. Neolipoptena ferrisi (Beq.) 1935.

**Lipoptena ferrisi* Beq. 1935 (California), n. name for "*subulata* Coq." of Ferris & Cole 1922.

DISTRIBUTION: Californian Subregion.

HOST PREFERENCE: Monoxenous; on *Odocoileus*, particularly *O. hemionus* Rafin.

Genus **Melophagus** Latr. 1802 (type: *ovina* Linn.)

Melophaga Olf. 1816 (type: *hirtella* Olf.).
Hippobosca subgen. *Melophila* Ntz. 1818 (type: *ovina* Linn.).
Melophagus subgen. *Dorcadophagus* Beq. 1942 (type: *rupicaprina* Rndn.).

DISTRIBUTION: Palaearctic Region; one of the 3 species introduced and now established in most temperate countries in the world.

HOST PREFERENCE: All 3 species are monoxenous; on Bovidae (Caprinae and Antilopinae).

SYSTEMATICS: Bequaert (1942a) recognized 2 subgenera and 2 species for this genus. These subgenera are here listed as species-groups. A third species is added. The genus is the sole representative of Bequaert's (*l. c.*) tribe Melophagini. It is placed at the top of the whole family, probably for the entire absence of true wings, halteres and median tergal plates and for the facial structure. Meanwhile, it is more louse-like than any other hippoboscids.

KEY TO SPECIES-GROUPS OF MELOPHAGUS

Palpus about as long as frons (=fronto-clypeus of authors); inner orbit with less than 10 bristles, those on occipital margin often forming into 1 short ctenidium at each

side ..... **rupicaprinus**-group
Palpus about 2 × as long as frons; inner orbit with about 20 bristles, those on occipital margin never forming ctenidia..... **ovinus**-group

(i) **ovinus**-group (*Melophagus* s. s.)

123. Melophagus ovinus (Linn.) 1758.

[*Pediculus reduvius* Moufet 1634 (England)]. nom. invalidum.
[*Pediculus ovinus* J. Ray 1710 (England)]. nom. invalidum.
[*Hippobosca aptera* Linn. 1747]. nom. invalidum.
†*Hippobosca ovina* Linn. 1758 (no locality; *restricte*: Sweden).
†*Melophaga hirtella* Olf. 1816 (no locality; *restricte*: Germany).
†*Melophagus vulgaris* M'Murtrie 1831, n. name for *ovina* Linn.
**Melophagus ovinus* var. *fera* Speis. 1908 (Caucasus).
**Melophagus ovinus montanus* Ferr. & Cole 1922 (Alaska).
**Melophagus ovinus* forma *bolivianus* Bau 1930 (Bolivia).

DISTRIBUTION: Palaearctic Region, widely spread; introduced and now established in most temperate countries but not found in hot humid tropical areas except cooler highlands.

HOST PREFERENCE: Monoxenous; on *Ovis aries* Linn. (domestic sheep; Caprinae); with stray records on other domestic animals, etc.

(ii) **rupicaprinus**-group (*Dorcadophagus*)

124. Melophagus antilopes (Pallas) 1777.

**Hippobosca antilopes* Pallas 1777 ("E. Siberia"; *restricte*: Transbaikalia).
**Melophaga antilopes* Wdm. 1830 ("S. Russia"; *recte*: Transbaikalia).

DISTRIBUTION: Eurosibirian Subregion (E. Siberia).

HOST PREFERENCE: Monoxenous; on *Procapra gutturosa* Pallas (Antilopinae).

125. *Melophagus rupicaprinus Rndn. 1879 ("Italy"; *restricte*: W. Alps in Italy).

DISTRIBUTION: Eurosibirian Subregion (Alps Mts.).

HOST PREFERENCE: Monoxenous; on *Rupicapra rupicapra* Linn. (Caprinae).

LITERATURE CITED

The following list covers only articles which contain original descriptions or citations of nominal genera and species, or information regarding their types. For brevity, titles of the articles are omitted or abbreviated, but these and other details are available in the bibliography by Bequaert (1953a: 362–421, 1957: 563–573). Following the name of each author, the total number of novelties denominated and the location of his type-specimens are given. And after each article, are listed names of new species and other novelties included therein. The asterisk (*) and dagger (†) marks before specific names mean the same as in the last chapter.

It may be noted that, of the 76 authors of the specific and infraspecific names, 42 are

each the denominator of a single name, and that only the following authors denominated more than 15 species each:

Table 4. Numbers of nominal and "valid" species denominated by chief authors in Hippoboscidae.

Author	Period	No. of spp. denominated	No. of spp. here listed as distinct
Macquart	1835–55	25	7
Walker	1849–61	16	5
Rondani	1863–79	26	9
Bigot	1858–92	20	5
Speiser	1899–1909	36	15, plus 1 dubious sp.
Ferris	1922–30	18	9, plus 3 distinct but misnamed spp.
Bequaert	1953–57	19	18

In short, these 7 authors are responsible for 160 nominal and 63 "valid" species, or about half of the totals of the whole family. The ratio of nominal against "valid" species by the 7 and by all authors is both about 100 : 40. A chronologic analysis of the specific and infraspecific names is given below.

Table 5. Chronologic analysis of nominal species in Hippoboscidae.

Period	No. of specific names denominated	Denominators
1758–1770	6	Linn., Scop.
1771–1780	3	Pallas, Scop.
1781–1790	0	———
1791–1800	1	A. G. Oliv.
1801–1810	14	Fabr., Latr., Megerle
1811–1820	22	Latr., Lch., Ntz., Olf.
1821–1830	13	Curt., Duf., Meig., Say, Wdm.
1831–1840	15	Bdv., Curt., Guér., Mcq., Perty, Ròser.
1841–1850	28	Denny, Erichs., Gimm., Mcq., Wk.
1851–1860	9	Bigot, Courtiller, Duf., Loew, Mcq., Motsch.
1861–1870	16	Giglioli, Jaenn., Packard, Rndn., Schin., C. G. Thms., Wk.
1871–1880	24	Rndn.
1881–1890	25	Bigot, Dugès, Jans., Lynch, Sahlb., Schnabl, Waterh., Weyenb.
1891–1900	11	Bigot, Coq., Ormerod, Röder, Speis., Twnd., Wllst., Wulp.
1901–1910	50	Austen, Bergr., Bigot, Coq., Matsum., Newst., Reed, Shp., Speis., Strobl, Theob., Wesché, Wulp.
1911–1920	17	Austen, Edw., Lutz, Swenk.
1921–1930	35	Austen, Bau, Dryensky, Falc., Ferr., Rbd.
1931–1940	16	Bedf., Beq., Gil Collado, Kishida, Séguy, Statz.
1941–1950	9	Beq.
1951–1960	12	Beq., Param., Tendeiro.

Aldrich, J. M. (1 n. gen.)
1923. Insec. Inscit. Menstr. **11**: 75–79. (*Ornithoponus* n. gen.).

Austen, E. E. (9 n. spp., 1 n. var., types in Brit. Mus.)

1903. Ann. Mag. Nat. Hist. ser. 7, **12**: 255–66.

1911. Bull. Ent. Res. **2**: 169–72. (**Hippobosca hirsuta* & n. var. **neavei*, **Olfersia dukei*).

1912. *Ibid.* **3**: 417. (**H. fulva*).

1921. *Ibid.* **12**: 107–24. (**Lipoptena caprina*).

1926. Parasitology **18**: 350–60. (**Crataerina acutipennis*, **longipennis*, **obtusipennis*, **propinqua*).

1930. Ann. Mag. Nat. Hist. ser. 10, **5**: 560–61. (**Ornithomyia comosa*).

Bau, A. (3 n. spp., 1 n. forma, types in Berlin Mus.)

1922. Centralbl. Bakt. Parasit. (Abt. 2) **57**: 274–79. (**Ornithoctona albiventris*, **Ornithoica melaleuca*).

1930b. Stettin. Ent. Ztg. **91**: 175–77. (**Lipoptena surinamensis*, **Melophagus ovinus* n. f. *bolivianus*).

Bedford, G. A. H. (1 n. sp., type lost)

1936b. Onderstepoort J. Vet. Anim. Sci. **7**: 67–68. (†*Hippobosca martinaglia*).

Bequaert, J. C. (1 n. gen., 2 n. subgenn., 1 n. name for genus; 2 n. names for spp.; 17 n. spp., types largely in Harvard Univ.)

1926b. Psyche **32** (for 1925): 265–77. (*Pseudolynchia* n. name).

1935c. Bull. Brooklyn Ent. Soc. **30**: 170. (**Lipoptena ferrisi* n. name).

1938b. Revista Ent. (Rio de Janeiro) **9**: 343–49. (**Microlynchia crypturelli*).

1941b. Occas. Pap. Bishop Mus. **16** (11): 247–92. (**Lynchia suvaensis*).

1942a. Ent. Amer. (n. ser.) **22**: 1–220. (*Neolipoptena* n. gen.; *Dorcadophagus*, *Lipoptenella* n. subgenn.; **Lipoptena grahami*, **hopkinsi*, **japonica*, **rusaecola*).

1943a. Psyche **49** (for 1942): 108–17. (**Brachypteromyia neotropica*).

1943c. J. Parasitology **29**: 131–35. (**Lynchia plaumanni*).

1945b. Psyche **52**: 88–104. (**Lynchia majuscula*, **schoutedeni*).

1953. Ent. Amer. (n. ser.) **32** (for 1952): 1–210; **33**: 211–442. (*Austrolfersia* n. gen.; **A. ferrisi* n. name).

1954. *Ibid.* **34**: 1–232. (**Ornithoctona orizabae*, **Ornithomyia hoffmannae*).

1955. *Ibid.* **35**: 233–416. (**Lynchia latifacies*, **Microlynchia furtiva*, **M. galapagoensis*, **Stilbometopa legtersi*).

1957. *Ibid.* **36**: 417–611. (**Lipoptena guimaraesi*).

Bergroth, E. (1 n. sp., type lost)

1901. Medd. Soc. Fn. Fl. Fennica **27**: 146–50. (†*Ornithomyia chloropus*).

Bigot, J. M. F. (1 n. gen.; 20 n. spp., types in coll. Collin, 1 in Paris Mus.)

1858. IN M. J. Thomson, Archives Ent. **2** (Voy. Gabon): 346–76. (**Olfersia minor*).

1884. Ann. Soc. Ent. Fr. ser. 6, **4** (Bull. Séances): lvii–lix. (**Hippobosca sudanica*).

1885. *Ibid.* ser. 6, **5**: 225–46. (*Zoomyia* n. gen.; **Hippobosca calopsis*, **H. sivae*, **Olfersia capensis*, **O. erythropsis*, **O. impressa*, **O. lividicolor*, *O. maura*, **O. noumeana*, **O. sordida*, **Ornithomyia aenescens*, **O. fuscipennis*, **O. haitiensis*, **O. hova*, **O. kanakorum*, **O. nitens*, **O. rufiventris*, **O. variegata*).

1892. The Humming Bird **2** (7): 49. (**Ornithomyia geniculata*).

Boisduval, J. B. A. (1 n. sp., type lost)

1835. IN d'Urville, Voy. Astrolabe Ent. (2): 667. (†*Hippobosca sitiens*).

Coquillett, D. W. (2 n. genn.; 4 n. spp., types in U. S. Nat. Mus.)

1899a. Fur Seal ... N. Pacif. Ocean **4** (for 1898) : 341–46. (**Ornithomyia butalis*).

1899b. Canad. Ent. **31** : 333–36, 343. (*Pseudolfersia*, *Stilbometopa* n. genn.; **Ps. maculata*).

1901. Proc. Washington Acad. Sci. **3** : 371–79. (**Pseudolfersia diomedeae*).

1907. Ent. News **18** : 290–92. (**Lipoptena subulata*).

Courtiller, A. (1 n .sp., type in coll. Collin).

1853. Ann. Soc. Linn. Dépt. Maine-et-Loire **1** : 196–97. (**Olfersia courtilleri*).

Curtis, J. (1 n. gen.; 2 n. spp., types 1 lost, 1 in Melbourne Mus.)

1824. Brit. Ent. **1** (3) : pl. 14. (*Haemobora* n. gen.; †*H. pallipes*).

1836. *Ibid.* **13** (146) : pl. 585. (*Ornithomyia fringillina*). Publ'd 1. II. 1836. Wrongly dated by Bezzi (1905) etc. as from 1824.

Denny, H. (1 n. sp., type lost)

1843. Ann. Mag. Nat. Hist. **12** : 312–16. (†*Lipoptena pteropi*).

Dryensky, P. (1 n. ssp., type in Sofia Mus.?)

1926. Mitt. Bulgar. Ent. Ges. **3** : 89–104. (*Hippobosca equina* n. ssp. *canina*).

Dufour, L. (2 n. spp., types lost)

1827. Ann. Sci. Nat. **10** : 243–48. (†*Ornithomyia biloba*).

1858. Ann. Soc. Ent. Fr. ser. 3, **6** (Bull.) : ciii. (†*Hippobosca camelina*).

Dugès, A. (1 n. sp., type lost).

1887. La Naturaleza (Mexico) ser. 2, **1** (1) : 18–21. (†*Ornithomyia villadae*).

Edwards, F. W. (1 n. sp., type in Brit. Mus.)

1919. Jour. Fed. Malay States Mus. **8** (3) : 7–59. (**Lipoptena pauciseta*).

Erichson, W. F. (1 n. sp., type in Berlin Mus.)

1842. Archiv f. Naturgesch. **8** (1) : 83–287. (**Ornithomyia nigricornis*).

Fabricius, J. C. (2 n. spp., types 1 lost, 1 in Kϕbenhavn Mus.)

1805. Syst. Antliatorum... 14+372+1+30 pp. (†*Hippobosca australasiae*, *longipennis*).

Falcoz, L. (1 n. name; 3 n. spp., types chiefly in Paris Mus., partly lost).

1926. Fn. Fr. **14** (Dipt. Pupip.) : 1–64. (†*Ornithoponus massonnati* n. name).

1929. Encycl. Ent. (ser. B) Dipt. **5** : 27–54. (**Crataerina seguyi*, **Ornithoctona idonea*, **O. oxycera*).

Ferris, G. F. (15 n. spp., types largely in Stanford Univ.)

1923. Parasitology **15** : 54–58. (**Ornithomyia strigilecula*).

1924a. Philip. Jour. Sci. **25** : 391–403. (**Ornithophila maquilingensis*).

1924b. Amer. Mus. Novitates **110** : 1–7. (**Ortholfersia raveni*).

1925b. Philip. Jour. Sci. **28** : 329–39. (**Ornithoponus sartus*).

1926. Sarawak Mus. J. **3** (3) : 279–86. (**Ornithoctona magna*, **soror*).

1927a. Canad. Ent. **59** : 246–51. (**Lynchia hirsuta*).

1927b. Ins. Somoa **6** (1) : 10–21. (**Lynchia samoana*).

1927c. Philip. Jour. Sci. **34** : 207–33. (**Lynchia bicorna*, **L. pollicipes*, **L. setosa*, **L. tuberculata*, **Ornithoica philippinensis*).

1930a. Parasitology **22** : 275–82. (**Ornithomyia inocellata*).

1930c. Canad. Ent. **62** : 62–70. (**Stilbometopa ramphastonis*).

Ferris, G. F. & F. R. Cole. (2 n. spp., 1 n. ssp., types in Stanford Univ.)

1922. Parasitology **14** : 178–205. (**Lipoptena traguli*, **Ornithoica promiscua*, **Melophagus ovinus* n. ssp. *montanus*).

Giglioli, H. (1 n. sp., type in Genova Mus.)

1864. Quart. J. Microsc. Sci. (n. ser.) **4**: 18–26. (**Ornithomyia chinensis*).

Gil Collado, J. (1 n. var., type in author's coll. ?)

1933. Eos **8** (for 1932): 317–23. (*Crataerina melbae* n. var. *anomala*).

Gimmerthal, B. A. (1 n. gen.; 1 n. sp., type lost ?)

1845. Stettin. Ent. Ztg. **6**: 151–53. (*Alcephagus* n. gen.)

1847a. Programm f. 50-Jähr. Jub. Fisch. v. Waldheim, Riga, Append.: 1–12. (*Anapera sibiriana*). Re-published in 1847b Bull. Soc. Nat. Moscou **20** (3): 140–208.

Guérin-Méneville, F. E. (4 n. spp., types 2 in Paris Mus., 2 lost)

1831. IN Duperrey, Voy. Coquille, Atlas: pls. 20–21. (**Hippobosca australis*). Text published in 1838 *Ibid.* **2** (pt. 2, sect. 1): 286–302, as *Ornithomyia australis*.

1835. IN Cuvier, Iconogr. Régne Anim. Ins., Atlas: pl. 104 (†*Ornithomyia chilensis*, **Anapera tangerii*). Text published in 1844 *Ibid.*: 556.

1838. IN Guérin-Méneville & Percheron, Genera d. Ins. ou Exposit. detaill. **6** (9): pl. 6, 1 unnumbered p. (†*Ornithomyia fusca*).

Guiglia, D.

1957. Ann. Mus. Stor. Nat. Genova **69**: 193–207.

Jaennicke, F. (2 n. spp., types 1 in Stockholm Mus., 1 lost ?)

1867. Abhandl. Senckenberg. Naturf. Ges. **6**: 311–408. (**Hippobosca wahlenbergiana*, *Ornithomyia javana*).

Janson, O. E. (1 n. sp., type in Brit. Mus.)

1889. IN Ormerod, Inj. Ins. S. Afr.: 56–60. (**Hippobosca struthionis*).

Kishida, K. (9 n. spp., types in author's coll.)

1932. IN Uchida *et al.*: Iconogr. Ins. Jap. (ed. 1): 243–49. (*Brachypteromyia nakamurai*, *Lynchia nipponica*, *Ornithoica annalis*, *O. diomedeae*, *O. distincta*, *O. kibitaki*, *O. momiyamai*, *O. nipponensis*, *Ornithomyia tropica*).

Latreille, P. A. (2 n. genn.; 1 n. name; 3 n. spp., types lost)

1802. Hist. Nat. Crust. Ins. **3**: i–xii, 1–467. (*Ornithomya*, *Melophagus* n. genn.).

1805. *Ibid.* **14**: 1–432. (†*Ornithomyia viridis* n. name).

1812. Ornithomyie. *Ornithomyia.* IN Cuvier: Encycl. Mèth. Ins. **8** (2): 540–45. (†*Ornithomyia brunnea*, †*pallida*, †*turdi*). Authorship of the 3 spp. has often been wrongly accredited to the editor, A. G. Olivier.

Leach, W. E. (3 n. genn.; 9 n. spp., types largely in Brit. Mus., 2 lost)

1817a. (Septem.) On genera & spp. Eprobosc. Ins.: 1–20. (*Feronia*, *Oxypterum*, *Stenepteryx* n. genn.; **F. americana*, †*F. macleayi*, **F. spinifera*, **Hippobosca camelina*, **H. francilloni*, **H. maculata*, **Ornithomyia erythrocephala*, **O. nigricans*, **Oxypt. kirbyanum*). Re-published in 1818 as Mem. Werner Soc. Edinburgh **2**: 547–66.

1817b. (Novem.) IN Brewster, Edinburgh Encyclopaedia **12** (1): 162.

Linnaeus, C. (1 n. gen.; 5 n. spp., types lost)

1758. Syst. Nat. (ed. 10): 607–11. (*Hippobosca* n. gen.; †*H. avicularia*, †*H. equina*, †*H. hirundinis*, †*H. ovinus*, †*Pediculus cervi*). Often wrongly dated from 1761 Fauna Suec.

Loew, H. (1 n. sp., type in Berlin Mus.)

1857. Wien. Ent. Monatschr. **1**: 1–10. (**Ornithomyia ptenoletis*).

Lutz, A. (2 n. genn.; 6 n. spp., types in Inst. Osw. Cruz)

1915. IN Lutz, Neiva & Costa Lima, Mem. Inst. Osw. Cruz (Rio de Janeiro) **7**: 173–99. (*Pseudornithomyia*, *Microlynchia* n. genn.; *Olfersia holoptera*, **O. palustris*, *O. raptatorum*, *Pseudolfersia meleagridis*, *Pseudorn. ambigua*, *Stilbometopa columbarum*).

Lynch-Arribálzaga, E. (1 n. sp., type lost)

1881. Informe Oficial Comisión Cient. Exped. Rio Negro **1** (Zool.): 88–91. (†*Ornithomyia synallaxidis*).

Maa, T. C. (1 n. sp., type in Australian Mus.)

1962. Pacific Ins. **4**: 583–614. (**Ortholfersia bequaerti*).

Macquart, J. (25 n. spp., types largely in Paris Mus. & coll. Collin, 5 lost; those at Lille Univ. not seen by me, said to have practically been destroyed by museum pests)

1835. Hist. Nat. Ins. Dipt. **2**: 1–705. (**Hippobosca maculata*, †*Olfersia ardeae*, †*O. fuscipennis*, †*O. longipalpis*, **Ornithomyia laticornis*, **Stenopteryx pygmaea*).

1840. IN Webb & Berthelot, Hist. Nat. Iles Canaries Ent. **2** (2): 97–119. (**Olfersia canariensis*).

1843. Mém. Soc. Sci. Lille **1842**: 162–460 (reprinted as Dipt. Exot. **2** (3): 1–304). (†*Hippobosca aegyptiaca*, **H. bipartita*, **H. fossulata*, **H. orientalis*, **Olfersia fossulata*, **O. mexicana*, **O. pilosa*, **O. testacea*, †*Ornithomyia chilensis*, **O. parva*, **O. platycera*).

1845. *Ibid.* **1844**: 133–364 (reprinted in 1846 as Dipt. Exot. Suppl.: 1–238). (**Olfersia fusca*, **Ornithomyia testacea*).

1847a. *Ibid.* **1846**: 21–120 (reprinted as Dipt. Exot. Suppl. **2**: 1–104). (**Olfersia bisulcata*).

1847b. *Ibid.* **1847**: 161–237 (reprinted as Dipt. Exot. Suppl. **3**: 1–83). (**Olfersia rufipes*).

1851. *Ibid.* **1851**: 134–294 (reprinted as Dipt. Exot. Suppl. **4**: 204–364). (**Ornithomyia asiatica*, **tasmanensis*).

1855. *Ibid.* **1854**: 25–156 (reprinted as Dipt. Exot. Suppl. **5**: 1–136). (**Hippobosca albomaculata*).

Matsumura, S. (1 n. sp., type in Hokkaido Univ.)

1905. Thous. Ins. Jap. **2**: 119. (*Ornithomyia aobatonis*).

Megerle von Mühlfeld, J. C. (1 n. sp., type lost)

1803. Appendix ad Cat. Ins. ..... 18 pp. (unnumbered). (†*Hippobosca variegata*).

Meigen, J. W. (1 n. gen.; 1 n. name for genus; 2 n. spp., types in Paris Mus.).

1830. Syst. Beschr. Eur. Zweifl. Ins. **6**: 227–237. (*Anapera* n. name; *Ornithobia* n. gen.; **O. pallida*, **Ornithomyia viridula*).

Motschulsky, V. (1 n. sp., type in Moscou Mus.?).

1860. Bull. Soc. Nat. Moscou **32** (2): 487–507. (*Hippobosca oculata*).

Newstead, R. (1 n. sp., type in Brit. Mus.)

1907. IN Newstead, Dutton & Todd, Ann. Trop. Med. Parasit. **1**: 3–112. (**Lipoptena paradoxa*).

Nitzsch, C. L. (3 n. subgenn., 1 n. name)

1818. Mag. Ent. (Germar) **3**: 261–316. (*Nirmomyia*, *Lipoptena*, *Melophila*, n. subgenn.; †*Hippobosca cervina* n. name).

von Olfers, J. F. M. (2 n. genn.; 2 n. names; 8 n. spp., types 3 in Berlin Mus., others lost)

1816. De Veget. & Anim. corporibus... **1**: 1–112. (*Crataerina*, *Melophaga* n. genn.; †*Pediculus capreoli*, †*Ornithomyia pelecani-piscatoris* n. names; †*Crat. lonchoptera*, **Hippobosca capensis*, **H. rufipes*, †*Mel. hirtella*, †*M. trifasciata*, †*Ornithomyia pallida*, **O. plicata*, **O. stenoptera*). Wrongly dated by Bezzi (1905) etc. as from 1805.

Olivier, A. G. (1 n. sp., type lost)

1792. IN Cuvier: Encycl. Méth. Ins. **7**: 82–92. (†*Hippobosca cervi*).

Ormerod, E. A. (1 n. var., type in Genova Mus.)

1895b. Veterinary Rec. **8**: (August): 82. (**Hippobosca aegyptiaca* n. var. *bengalensis*). Re-published in 1896 Indian Mus. Notes **4**: 80.

Packard, A. S. (1 n. sp., type in Harvard Univ.)

1869. Guide to the study of insects: 417. (**Hippobosca bubonis*).

Pallas, P. S. (2 n. spp., types in Wien Mus.)

1777. Spicilegia Zoologica ... **12**: 1–71. (**Hippobosca antilopes*, **moschi*).

Panzer, G. W. F.

1794. Fn. Ins. German. Dipt. Heft 13–24, 288 pls.

Paramonov, S. J. (2 n. spp., types in Commonw. Ind. Sci. Res. Organiz.)

1954. Ann. Mag. Nat. Hist. ser. 12, **7**: 283–92. (*Ornithophila australica*, *Ortholfersia minuta*).

Perty, M. (1 n. sp., type in Munich State Mus.)

1833. Delectus Anim. Articul. Brasil. **3**: 190. (**Hippobosca nigra*).

Reed, E. C. (1 n. sp., type in Calif. Acad. Sci.)

1904. Rev. Chilena Hist. Nat. **8**: 149–53. (*Ornithomyia chilensis*).

von Röder, V. (1 n. sp., type in Deutsch. Ent. Inst.)

1892. Jahrb. Hamburg. Wiss. Anst. **10** (2): 203–6. (**Ornithoica podicipis*).

Rondani, C. (5 n. genn.; 26 n. spp., types largely in Firenze & Genova Mus.; whereabouts of 3 uncertain).

1863. Archivio per la Zoologia (Modena) **3** (1): 92. (*Hippobosca albonotata*).

1875. Ann. Mus. Stor. Nat. Genova **7**: 421–66. (*Myophthiria* n. gen.; **M. reduvioides*).

1878. *Ibid.* **12**: 150–70. (*Ornithoica*, *Myiocoryza* n. genn.; **Hippobosca bactriana*, **H. canina*, **Lipoptena capreoli*, **L. mazamae*, **Myiophthiria capsoides*, **M. lygaeoides*, **Olfersia macquartii*, *O. obliquinervis*, *O. pallidilabris*, **O. papuana*, **Ornithoica beccariina*, **Ornithomyia andajensis*, **O. batchiana*, **O. bellardiana*, **O. gestroi*, **O. hatamensis*).

1879. Boll. Soc. Ent. Ital. **11**: 3–28. (*Chelidomyia*, *Ornithophila* n. genn.; **Ch. cypseli*, **Ch. melbae*, **Hippobosca taurina*, **Melophagus rupicaprinus*, **Olfersia botauri*, **Ol. falcinelli*, **Ol. garzettae*; **Ornithophila vagans*).

von Roser, C. L. F. (1 n. sp., type in Stuttgart Mus.?)

1840. Correspondenzbl. Landwirtsch. Ver. Würtemberg **1** (1): 49–64. (*Ornithomyia nigrirostris*).

Roubaud, E. (1 n. sp., type lost?).

1925. Bull. Soc. Path. Exot. (Paris) **18**: 465–69. (*Hippobosca camelopardalis*).

Sahlberg, J. (1 n. sp., type in Helsinki Mus.)

1886. Medd. Soc. Fn. Fl. Fennica **13**: 149–152. (**Lynchia fumipennis*).

Say, T. (5 n. spp., types lost, only 1 at Wien Mus.)

1823. Jour. Acad. Sci. Philadelphia **3**: 73–104. (**Melophagus depressus*, †*Olfersia albipennis*, †*Ornithomyia confluenta*, †*O. nebulosa*, †*O. pallida*).

Schiner, J. R. (5 n. spp., types in Wien Mus.)

1864. Fn. Austriaca Dipt. **2**: 644–50. (**Ornithomyia metallica*, **O. tenella*).

1868. Reise Novara Dipt.: 1–388. (**Ornithomyia fur*, **pusilla*, **stipituri*).

Schnabl (=Sznabl), J. (1 n. sp., type in Amsterdam Mus.)

1881. Physiogr. Denkschr. (Warsaw): 357–390 (reprinted as pp. 1–46). (**Lipoptena*

alcis).

Scopoli, J. A. (2 n. spp., types lost)

1763. Ent. Carniolica: 376–77. (†*Hippobosca corvi*).

1772. Annus V. Historico-Naturalis: 124. (†*Hippobosca strigis*).

Séguy, E. (3 n. spp., types in Paris Mus.)

1935a. Bull. Mens. Assoc. Nat. Loing **11**: 85–86. (**Lipoptena couturieri*).

1938a. Encycl. Ent. ser. B 2, Dipt. **9**: 75–78. (**Ornithomyia roubaudi*, **transfuga*).

Sharp, D. (1 n. sp., type in Brit. Mus.)

1907. Ent. Mon. Mag. **43**: 58–60. (**Ornithomyia lagopodis*).

Speiser, P. (7 n. genn.; 3 n. names; 30 n. spp., 3 n. var., types partly lost, partly scattered).

1899a. Wien. Ent. Ztg. **18**: 197–202. (*Allobosca* n. gen.; †*A. crassipes*).

1900. Ann. Mus. Stor. Nat. Genova **40**: 553–62. (**Olfersia exornata*, **Ornithoica unicolor*).

1902a. Termész. Füzetek **25**: 327–38. (*Ornitheza*, *Ornithoctona* n. genn.; †*Olfersia parallelifrons*, **Ornithoica distenta*, **Ornithomyia perfuga*).

1902b. Zts. Hym. Dipt. **2**: 145–80. (*Ortholfersia*, *Ornithopertha* n. genn.; **Hippobosca dromedarina* n. name; **Olfersia acarta*, **Lynchia pusilla*, †*Orthol. phaneroneura*).

1902c. Fn. Hawaii. **2** (2): 86–92. (*Olfersia acarta* re-published as n. sp.; **Ornithoica confluenta* n. var. *peroneura*).

1903c. Fasciculi Malay. Zool. **1**: 117–26. (**Lipoptena gracilis*).

1904a. Ann. Mus. Stor. Nat. Genova **41**: 332–50. (*Lynchia simillima*, **Olfersia chalcolampra*, †*Ornithoctona melaena*, **O. vitrina*, **Ornithomyia pyrrhocephala*).

1904b. Zts. Hym. Dipt. **4**: 82–89.

1904c. *Ibid.* **4**: 177–80. (**Lipoptena chalcomelaena*, **Ornitheza pallipes*).

1904d. Ann. Mus. Nat. Hungarici **2**: 386–95. (**Olfersia acromialis*,† *O. dioxyrhina*, †*Ornitheza odontoscelis*, **Ornithopertha anthracina*, **Stilbometopa podopostyla*).

1905a. Zts. Hym. Dipt. **5**: 347–60. (*Icosta* n. gen.; †*Ornithomyia anchineuria*, *O. paricella* n. names; †*Lipoptena conifera*, **L. efovea*, **L. sepiacea*, **Olfersia nigrita*, **O. trita*, *Pseudolfersia mycetifera*).

1907a. IN Sjöstedt, Ergebn. Exped. Kilimandjaro Meru **2** (10): 1–10. (*Echestypus* n. gen.; **E. parvipalpis*).

1908a. IN Schultze, Ergebn. Forschungsreise Südafrika **1**: 175–78. (**E. binoculus*).

1908c. Zts. Wiss. Ins.-Biol. **4**: 437–47. (**Melophagus ovinus* n. var. *fera*).

1909c. IN Sjöstedt, Ergebn. Exped. Kilimandjaro Meru **2** (10): 25–30. (**Hippobosca struthionis* n. var. *massaica*).

Statz, G. (1 n. fossil sp., type in Los Angeles Mus.)

1940. Palaeontographica (A) **91**: 119–74. (*Ornithoponus rottensis*).

Strobl, G. (1 n. var., type lost?)

1906. Mem. Soc. Españ. Hist. Nat. **3**: 271–422. (*Stenepteryx hirundinis* n. var. *nigriventris*).

Swenk, M. H. (6 n. spp., types in Nebraska Univ.)

1916. Jour. N. York Ent. Soc. **24**: 126–36. (*Olfersia botaurinorum*, *Ol. scutellaris*, *Ol. wolcotti*, *Ornithomyia buteonis*, *Orn. costaricensis*, *Orn. pirangae*).

Tendeiro, J. (1 n. sp., type in author's coll.?)

1951. Centro Estudos Guiné Portuguesa **15**: 121–52. (Also as Anais da Ministerio

d. Colonias, Junta de Investig. Coloniais, Lisboa **4** (2): 121–52) (*Pseudolynchia fradeorum*)

Theobald, F. V. (1 n. sp., type in Brit. Mus.?)

1906. Rept. Wellcome Res. Lab. Khartoum **2**: 83–92. (*Lipoptena ibicis*).

Thomson, C. G. (3 n. spp., types in Stockholm Mus.)

1869. Diptera. Freg. Eug. Resa Insekter **6** (2): 443–614. (**Olfersia aenescens*, **Ol. sulcifrons*, **Ornithomyia gemina*).

Townsend, C. H. T. (1 n. var., type in Brit. Mus.)

1897. Ann. Mag. Nat. Hist. ser. 6, **20**: 272–91. (**Lipoptena depressa* n. var. *mexicana*).

Walker, F. (16 n. spp., types in Brit. Mus. & Oxford Univ., 2 lost)

1849. List Dipt. Ins. Brit. Mus. **4**: 689–1172. (**Olfersia propinqua*, †*Ornithobia capensis*, **Ornithomyia fulvifrons*, **Orn. intertropica*, **Orn. opposita*, **Orn. remota*, **Orn. unicolor*, **Orn. varipes*, **Orn. vicina*).

1858. Trans. Ent. Soc. London n. ser., **4**: 235. (**Hippobosca viridipes*).

1861. Jour. Proc. Linn. Soc. (London) Zool. **5**: 229–302. (**Ornithomyia batchianica*, †*doreica*, **exilis*, **obscurata*, **plana*, **simplex*).

Waterhouse, C. D. (1 n. sp., type in Brit. Mus.)

1887. Proc. Zool. Soc. London **1887**: 163–64. (**Anapera fimbriata*).

Wesché, W. (1 n. sp., type in Brit. Mus.)

1903. Ann. Mag. Nat. Hist. ser. 7, **11**: 384–85. (**Hippobosca tasmanica*).

Weyenbergh, H. (1 n. gen.; 1 n. sp., type lost)

1881. An. Soc. Cient. Argentina **11** (5): 193–200. (*Lynchia* n. gen.; **L. penelopes*).

Wiedemann, C. R. W. (1 n. name for genus; 4 n. spp., types largely in Wien Mus.)

1824. Analecta Ent.: 1–60. (**Ornithomyia columbae*).

1830. Aussereur. Zweifl. Ins. **2**: 602–14. (*Olfersia* n. name; **Melophaga antilopes*, **M. moschi*, *Ornithomyia fusciventris*).

Williston, S. W. (1 n. gen.; 1 n. sp., type lost)

1896. Ent. News **7**: 184–85. (*Brachypteromyia* n. gen.; †*B. femorata*).

van der Wulp, F. M. (6 n. spp., types largely in Brit. Mus.)

1897. Természz. Füzetek **20**: 136–44. (†*Olfersia longirostris*).

1903. Biol. Centr. Amer. Dipt. **2**: 429–32. (**Olfersia angustifrons*, **Ol. coriacea*, **Ol. vulturis*, **Ornithomyia, pilosula*, **Orn. robusta*).

APPENDIX

I. REVISION OF A FEW SPECIES GROUPS

The **Ornithoica curvata** group

Body of medium to large size (for the genus). Postvertex bare. Thoracic dorsum extensively bare, anteriorly or entirely with strong metallic lustre, not densely haired and punctate but feebly longitudinally striate. Setulose areas of wing small, only covering about apical 1/2 to 2/3 of cell *3r*, and represented in *1m* by 2–3 strips or patches near apical margin and in *2m* by a tiny patch (often absent) at antero-apical corner; vein *rm* about equidistant to R_{4+5}–apex and to M–furcation; M_{1+2} strongly curved forward at vicinity of

bulla where it touches or, almost touches Rs–furcation; cell *3bc* large, about 2× as long as wide. Hind trochanter in ♂ without patch of spines at inner side. Hind tibia in ♀ without series of preapical spines at inner side. Abdomen with syntergum 1+2 much more weakly sclerotized than median tergal plates; median tergal plate 1 in ♀ U-shaped, with anterolateral lobes more or less raised; plate 4 in ♀ subtriangular, strongly produced caudad at middle; lateral membranous areas in ♀ near base and apex with anchor-like warts each bearing single minute seta, but no multispiniferous warts at sides of urogenital openings. Supra-anal plate transverse.

DISTRIBUTION: Oriental Region, at present known from 3 species occurring from the Indo-Chinese to Papuan Subregions.

HOST PREFERENCE: Little known; one of the species is polyxenous, the 2 others probably pleio- or polyxenous.

SYSTEMATICS: Obviously more specialized than the *turdi*-group which is much more widely distributed, weaker in sexual dimorphism, and has more generalized structure.

KEY TO SPECIES OF ORNITHOICA CURVATA GROUP

1. Mesosternum (median area) and metabasisternum with only fine setae, no spiniform ones; anterolateral lobes of median tergal plate 1 in ♀ very strongly raised, nipple-like and in side view about 1/2 as deep as greatest length of the plate; abdominal venter in ♂ distinctly setose at area immediately ental to spiracle 2, almost bare at area immediately posterior to same spiracle..... **hirtisternum**

   Mesosternum and metabasisternum with both fine and spiniform setae; anterolateral lobes of median tergal plate 1 in ♀ slightly raised, not nipple-like..... 2

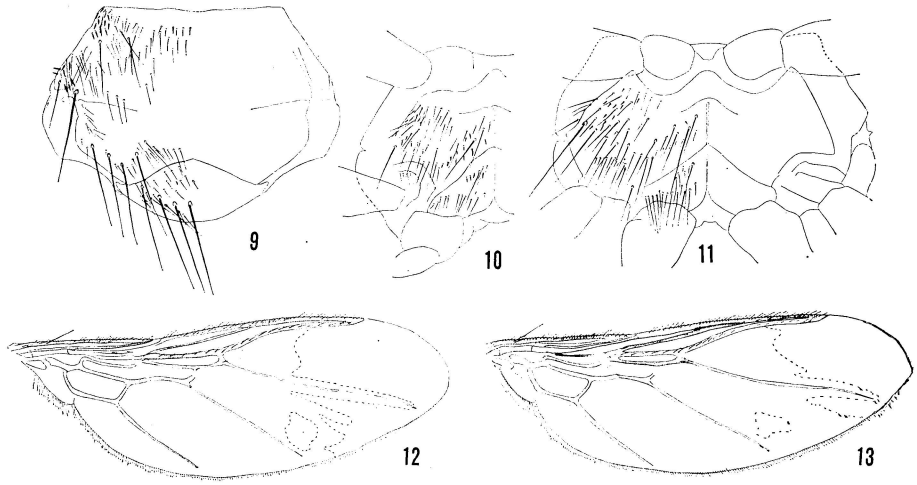
2. Anterolateral lobes of median tergal plate 1 in ♀ parallel to each other, anteriorly rounded; scutellum and median tergal plates with strong metallic lustre; abdominal venter in ♀ with 2 pairs of pregenital tubercles bearing spines and bristles, in ♂ distinctly setose at area immediately ental and posterior to spiracle 2... **curvata**

   Anterolateral lobes of median tergal plate 1 in ♀ convergent cephalad, anteriorly obliquely truncate; scutellum and median tergal plates without metallic lustre; abdominal venter in ♀ with only 1 pair of pregenital tubercles bearing spines and bristles, in ♂ rather extensively bare at area immediately ental and posterior to spiracle 2..... **submicans**

Ornithoica submicans Maa, n. sp. Figs. 14, 15, 20.

PHILIPPINES: Holotype ♀, allotype ♂, (CNHM), Taglawig, Tagum, Davao Prov., Mindanao, nr. sea level, ex bird (fld. ♯1046), 14. X. 1946, H. Hoogstraal. Paratypes, 1 ♀, same data as holotype; 1♂ (CNHM), Madaum, Tagum, Davao Prov., Mindanao, nr. sea level, ex bird (fld. ♯953), 10. X. 1946, F. Werner; 1 ♂ (STF), mutilated, Isabela Prov., Luzon, ex *Penelopides manillae*; 2 ♀♀ (STF), Nupol, Makar, Mindanao, ex *Craniorhinus leucocephalus*, 14. III. 1932, F. Rivera; 1♂, 1♀ (STF), Dinagat I., NE Mindanao, ex *Hydrocorax* [*Buceros*] *mindanaensis*, 28. V. 1931, A. C. Duyag; 1♂ (USNM), Tagaslian, Borongan, Samar, ex *Penelopides p. samarensis*, VI. 1948, A. P. Castro & P. Añonuevo.

Holo- and allotypes, in alcohol, in Chicago Nat. Hist. Mus. (CNHM); paratypes in Bishop Mus., Stanford Univ. Nat. Hist. Mus. (STF) and U. S. Nat. Mus. (USNM).



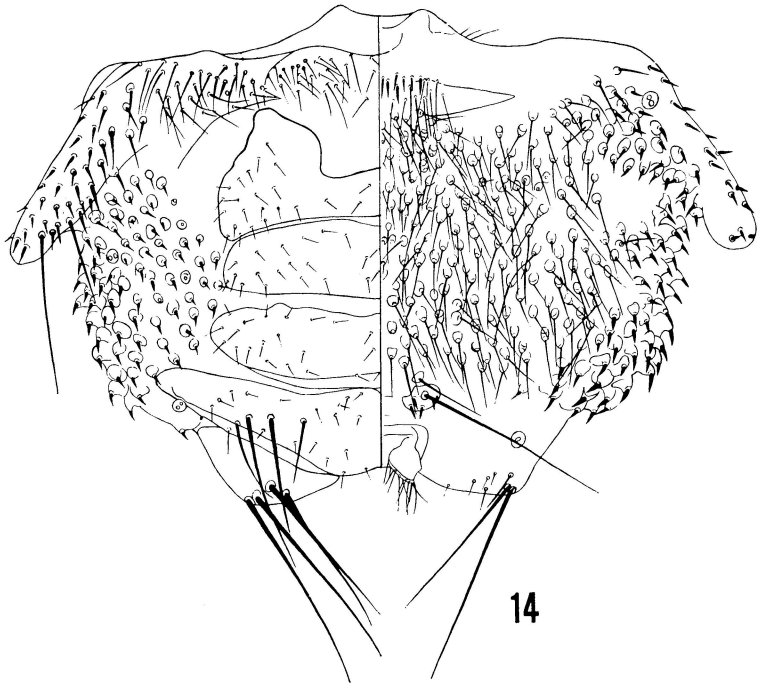
Figs. 9–13. *Ornithoica* n. spp. 9, *curvata*, dorsum of thorax; 10, *id.*, venter of thorax; 11, *hirtisternum*, venter of thorax; 12, *curvata* ♀, wing; 13, *hirtisternum* ♀, wing. Figs. 9–11 drawn to same scale; 12–13, not to same scale, with broken lines indicating extent of setulose areas.

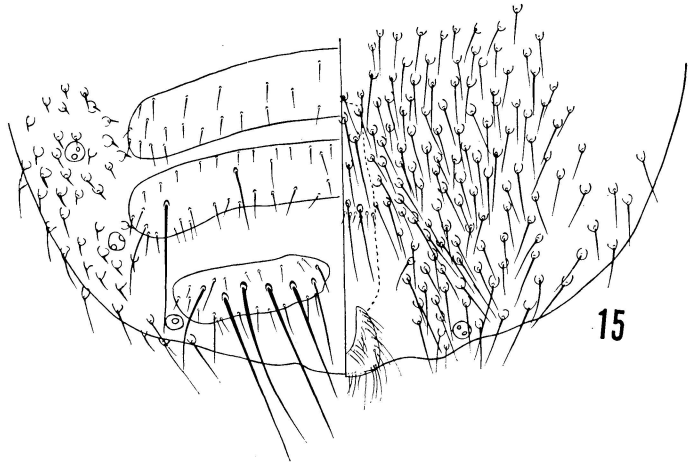
Female: Praescutum and anterior 2/3 of scutum black and with strong metallic lustre; remaining part of thoracic dorsum and abdominal plates brown, without strong metallic lustre. Prosternum anteriorly broadly rounded. Mesosternum (median area) and metabasisternum with both fine and spiniform setae as in *curvata*. Setulose areas of wing less extensive than in *curvata*; cell *1m* with either 2 isolated small patches or 3 very narrow strips near apical margin; cell *2m* either entirely bare or with a very tiny patch at antero-apical corner. Hind margin of syntergum 1+2 nearly straight. Median tergal plates 1–3 all narrower (*ca.* 19: 25) than head; anterolateral lobes of plate 1 convergent cephalad, anteriorly obliquely truncate, moderately raised, not nipple-like and in side view, only about 1/8 as deep as greatest length of the plate; plates 2 and 3 subequal in length and size; plate 4 with 2 (seldom 1) bristles at a side, median area without longitudinal slit but paler and less sclerotized than lateral areas. Para-anal lateral plate also paler and less sclerotized than median tergal plates. Laterite 2 (hind extension of syntergum 1+2) with 1 moderately long bristle at apex. Anchor-like warts at lateral areas small, those at anterolateral corner hardly distinguishable from spines on laterite 2. Membranous area before genital opening with only 1 pair of tubercles which are weakly sclerotized and each bears 1 long bristle and about 10 spines. Wing 3.4 mm long.

Male: Cell *1m* with only 2 small isolated patches of setulae. Median tergal plate 3 with 1–2 bristles at a side; plate 4, with 4, rarely 3 or 5. Abdominal spiracles all large, with diameter about 3× that of neighboring setigerous tubercles. Abdominal venter rather extensively bare at area immediately ental and posterior to spiracle 2. Other characters similar to that in ♂ *curvata*. Wing 3.4–3.6 mm long.

Notes: This species is probably confined to the Philippines and has been recorded by Ferris (1927 Philip. J. Sci. **34**: 209, fig. 2), based upon a mutilated ♂, under the name

"*unicolor* Speis.", from Luzon ex *Penelopides.* Since then Bequaert (1953 Ent. Amer. n. ser. **33**: 271, 314, 319) recorded it under the same wrong name from the "East Indies" ex *Aceros* and *Buceros* and considered it to be oligoxenous on Bucerotidae, Coraciiformes. Ferris' material has been re-examined by me in early 1962.





Figs. 14-15. *Ornithoica submicans* n. sp., ♀ (14) and ♂ (15) abdomen, dorsal and ventral aspects at left and right halves respectively.

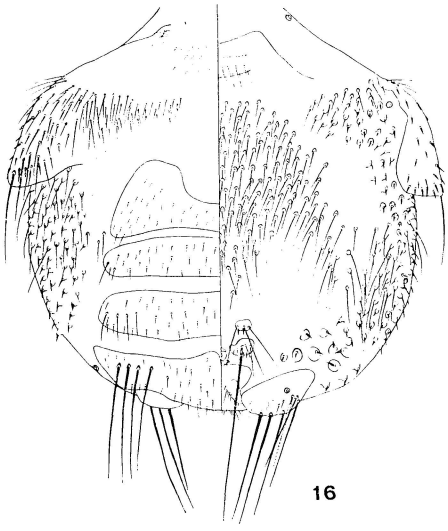
Ornithoica curvata Maa, n. sp. Figs. 9, 10, 12, 16, 17, 21.

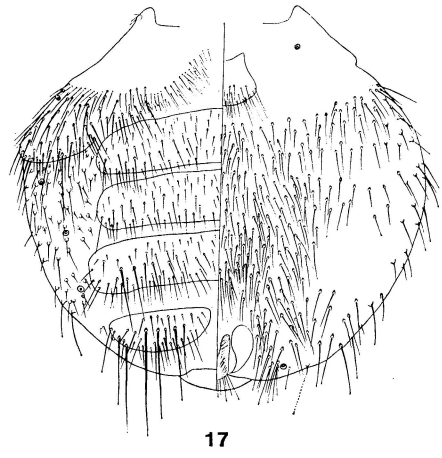
THAILAND: Holotype ♀ (BISHOP 3135), Nan, Ban Pha Hang, ex *Picus erythropygius*, 16. XII. 1961, Kitta Thonglongya ex SMRL #V–226; allotype ♂ (BISHOP), same data. Paratypes, 2♀♀ (BISHOP ex SMRL #V–26), Prae, Ban Phi Tone, ex *Centropus sinensis*, 20. XI. 1961, Kitta; 1♀ (CNHM), Kanchanaburi, Trakhanun, Hinlaem, left bank, ex *Anthracoceros leucogaster* (?), 27. XI. 1952, R. E. Elbel; 1♂ (CNHM), same data but ex *Centropus sinensis*, 9. XI. 1952; 2♀♀ (CNHM), same but 5. XI. 1952; 1♂ (CNHM), same but ex *Picus canus*, 31. X. 1952; 2♂♂, 2♀♀ (CNHM), same but 12. XI. 1952; 1♂, 1♀ (CNHM), same but ex *P. flavinucha*; 3♂♂ (CNHM), Chaiyaphum, Pookhiew, Ban Nam Poo, ex *Anthracoceros malabaricus*, 22. XII. 1952, Elbel; 6♀♀ (CNHM), Nakhon Ratchasima Sikiu, Pak Chong 2, ex bird (#R. E. 3006), 25. IX. 1953, Elbel; 1♂ (CNHM), Muang Chiang Rai, Chiang Saenkhao, Ban Sop Luak, ex *Nyctiornis athertoni*, 2. III. 1953, H. G. Deignan; 1♀ (CNHM), Muang Lampang, Pang La, ex *Picus erythropygius*, 3. II. 1953, Deignan; 1♂, 1♀ (CNHM), Muang Nan, Ban Nam Muap, ex *Chrysocolaptes lucidus*, 13. I. 1953, Deignan; 1♀ (CNHM), Muang Nan, Pang Nam Un, ex *Picus flavinucha*, 19. I. 1953, Deignan; 1♂ (CNHM), same data but ex *P. canus*, 18. I. 1953; 2♂♂ (CNHM), same but ex *P. erythropygius*, 23. I. 1953; 2♂♂, 1♀ (CNHM), Kamphaeng Phet, Khanu, Ban Hua Thanon, host record lost, 2–10. IV. 1953, Deignan; 2♂♂, 1♀ (CNHM), same but ex *Centropus sinensis*, 8. IV. 1953; 3♂♂, 1♀ (CNHM), same but ex *Picus vittatus*; 1♂ (CNHM), same but ex *P. flavinucha*, 6. IV. 1953; 1♀ (USNM), Sakon Nakhon, ex bird (B–30905), VI. 1954, R. E. Elbel; 7♂♂, 3♀♀ (USNM), Loei, ex birds (B–30936, 30939, 30954, 30981, 31009, 31201), IX–XI. 1954, Elbel; 1♂, 1♀, Ban Tham, Amphoe Chiengdao, Chiengmai, 1000 m, ex *Centropus sinensis* (SMRL–1895), XI. 1962; 1♂, Pa Dong Lan, Amphoe Chum Phae, Khonkhaen, 300 m, ex *Chrysocolaptes lucidus* (SMRL–1990), XI. 1962; 1♀, same data but ex *Dicrurus paradiseus* (SMRL–1991).

BORNEO: 1♀ (CNHM), Tinjar, Fort Leju, Sarawak, ex *Centropus sinensis*, 19. VI. 1950, Harrisson, Insoll & Johan.

Holo- and allotypes, ex SE Asia Treaty Organiz. Med. Res. Lab. (SMRL), partly mounted on slides, in Bishop Mus.; paratypes in alcohol, largely in Chicago Nat. Hist. Mus. (CNHM), partly to be distributed to other museums. The single ♀ from Borneo is not included in the type series.

Female: Color pattern typical for the genus but thoracic dorsum and abdominal tergal plates black and with strong bluish or greenish metallic lustre. Head in side view with occiput virtually perpendicular to gula; in front view with smallest interocular distance subequal to greatest width of eye *i. e.*, 1/3 of width of head; occipital margin quite sharply edged; nipple-like tubercle at base of vertical bristle less prominent than in *turdi*-group. Thorax in side view hardly longer than deep. Humerus largely bare, with many spiniform setae on outer margin, 1–2 long bristles near hind margin, and scattered short setae elsewhere. Praescutum and scutum largely smooth, bare and with obscure widely-spaced longitudinal striae; areas narrowly along anterior praescutal and posterior scutal margins with scattered soft hairs; pre-alar bristle strong; 2 outer ones of 4 postalar bristles longer than inner ones and than pre-alar; mesothoracic spiracle lateral, slightly wider than long. Scutellum transversely rugulose, with some soft hairs; 6–8 scutellar bristles, arranged in an arcuate series, rarely with several fine interstitial bristles. Prosternum short, anteriorly broadly rounded. Mesosternum with 1–2 rows of spiniform and 1 row of fine black ordinary





Figs. 16–17. *Ornithoica curvata* n. sp. 16, ♀ abdomen, dorsal and ventral aspects at left and right halves respectively; 17; same, ♂.

setae at area between mid coxae; lateral area with numerous soft pale hairs in addition to spiniform and ordinary setae. Metabasisternum anteriorly with 1–2 rows of spiniform setae and 2–4 fine ordinary black setae, posteriorly with a row of pale soft hairs. Wing similar to that figured by Ferris (1927 Philip. J. Sci. **34**: 209, fig. 2) as "*O. unicolor* Speis.", entirely bare at basal 1/2; cell *3r* setulose at apical 2/3, bare at basal 1/3 and narrowly along vein M_{1+2}; *1m* largely bare, with 3 setulose strips often apically expanding and merging together; *2m* with a tiny patch of setulae near antero-apical corner; *1bc* widest at level of vein *im*; *2bc* widest at level of bulla on vein M_{1+2}; *3bc* parallel-sided except at base. Syntergum 1+2 feebly sclerotized, in strong contrast to heavily sclerotized tergal plates, its hind margin almost straight; median tergal plates 1–3 all narrower (*ca.* 18 : 25) than head; plate 1 with its anterolateral lobes parallel to each other, slightly raised, anteriorly rounded; plate 2 shorter than 3 and closer to 1 than to 3; plate 4 larger than preceding ones, with 2–3 (seldom 1 or 4) bristles at a side, anteriorly with short median slit. Para-anal lateral plate subtriangular, large, with 4–5 (seldom 3 or 5) long bristles. Supra-anal plate lunulate, transverse, feebly sclerotized. Laterite 2 (hind extension of syntergum 1+2) posteriorly with only 1 long and few short bristles. Sternum 1 soft-haired, posteriorly with 1–2 rows of spiniform setae which are finer than those on thoracic sterna and often replaced by fine black setae. Lateral area of abdomen with numerous setigerous anchor-like warts, those at anterolateral corner of abdominal venter and at side of urogenital area equally stouter than elsewhere. Discal area of abdominal venter evenly setose; bare area before genital opening with 2 pairs of submedian tubercles, 1st pair much smaller, each bearing 1–4 short bristles and 2–5 short spines; 2nd pair with 1 long bristle and about 8 spines. Pregenital plate smaller than postgenital, both well developed; no multispiniferous warts at sides of urogenital area. Wing 3.2–3.6 mm long.

Male: Similar. Hind trochanter with long, fine setae. Median tergal plates of abdomen with stronger metallic lustre and normal in shape (for ♂♂ of the genus); plate

3 with 1–3 (usually 2) bristles at a side; plate 4 widely interrupted at middle, with 2–5 (usually 4) long bristles at a side. Abdominal spiracles all small, with diameter about 1.5× that of neighboring setigerous tubercles. Abdominal venter distinctly setose at area immediately ental and posterior to spiracle 2; para-anal lateral plate wanting, not represented by tubercle or bristle-bunch. Chaetotaxy at membranous area of abdomen usual for ♂♂ of the genus. Supra-anal plate large, transverse, lunulate. Wing 3.1–3.7 mm long.

Notes: The above description is based upon 31♂♂ and 28♀♀. No gynandromorphs were found although these are rather common in species of the *turdi*-group where the ♀♀ are much more numerous than ♂♂ in collections (if not in nature). Hence it is not impossible that some interrelationship exists between the sex-ratio and the occurrence of gynandromorphs.

The species is apparently polyxenous. A summary of the above-given host data is: Piciformes (10 records on *Picus* and 2 on *Chrysocolaptes* in Picidae); Cuculiformes (7 on *Centropus* in Cuculidae); Coraciiformes (2 on *Anthracoceros* in Bucerotidae, 1 on *Nycticornis* in Meropidae); Passeriformes (1 doubtful record on *Dicrurus* in Dicruridae).

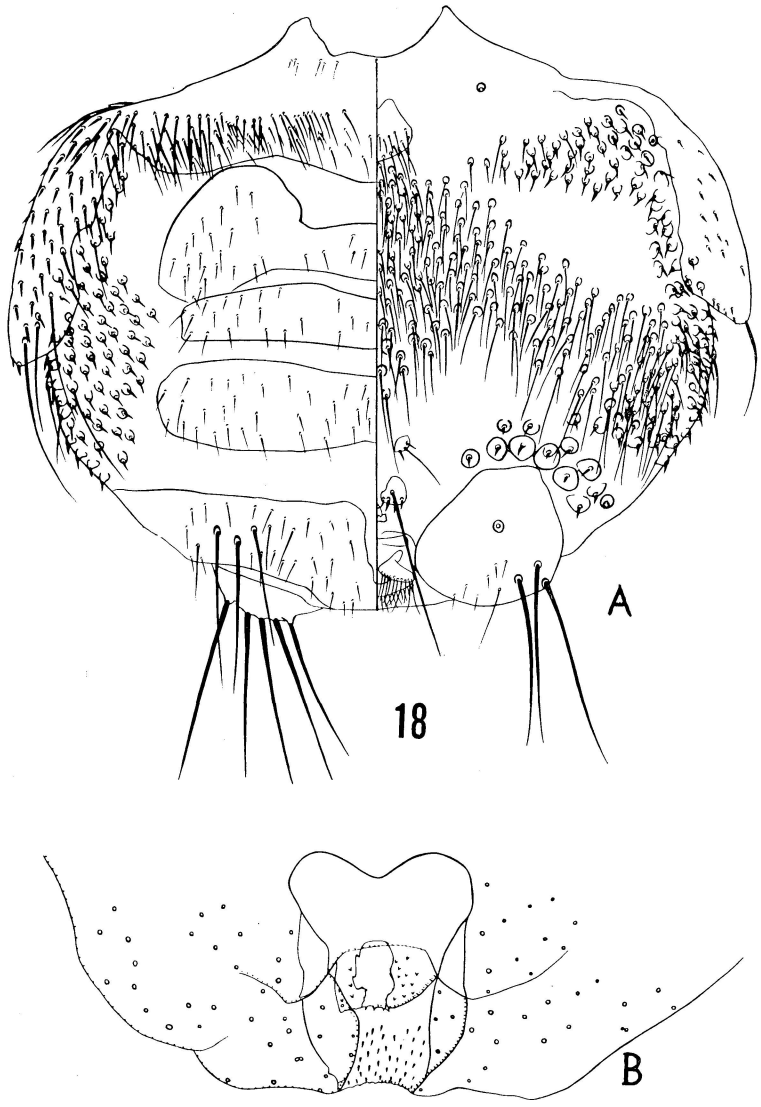
The single ♀ from Borneo ex *Centropus sinensis*, 1♂, 2♀♀ from Thailand ex the same host, and another Thailand ♀ ex an undetermined bird all harbor *Microlichus* mites and their eggs, larvae and exuviae. Numbers of mites on the respective flies are: 2 on abdominal dorsum; 1 on abdominal dorsum and 1 larva on abdominal base; 11 on abdominal venter and 1 on wing-base; 1 on abdominal venter and 1 on wing-base; 3 on abdominal dorsum, 2 on abdominal venter and 1 on gula. On the other hand, one of the ♂♂ ex *Anthracoceros malabaricus* is heavily covered on the thorax with mycelium-clusters of a Laboulbeniales fungus.

O. curvata stands closer to *O. submicans* than to *O. hirtisternum*. While some of the characters (prosternum, chaetotaxy of thoracic venter and syntergum 1+2) are in common with the former species, and some (color pattern, ♂ abdominal spiracles and ♀ pregenital spiniferous tubercles), in common with the latter, others characters (median tergal plates and anchor-like warts at sides of ♀ abdomen) are intermediate of those 2 species.

Ornithoica hirtisternum Maa, n. sp. Figs. 11, 13, 18, 19, 22.

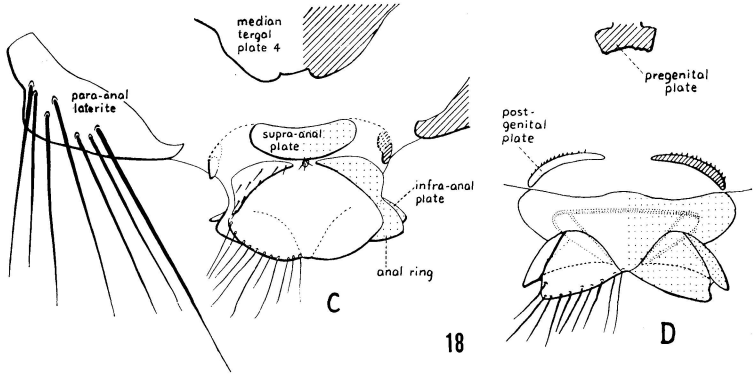
NW NEW GUINEA: Holotype ♀, allotype ♂ (BISHOP 3136), Vogelkop Penin., Kebar Valley, 550 m, ex *Phonygammus keraudrenii* (BBM–779), 14. I. 1962, L. & S. Quate. Paratypes, 2♀♀, same data as holotype; 1♀, same data but ex *Ardea sumatrana* (BBM–776); 4♂♂, 4♀♀, Oransbari, NW Geelvink Bay, ex *Rhyticeros plicatus* (BBM–22293), 23. I. 1963, L. P. Richards and M. C. Thompson; 3♂♂, 4♀♀, same data but BBM–22399 and II. 8. 1963. Type series, partly mounted on slides, in Bishop Mus.

Female: Thoracic dorsum and median tergal and para-anal lateral plates all black and with strong metallic lustre. Prosternum anteriorly acute, not broadly rounded. Mesosternum (median area) and metabasisternum each sparsely covered with 2 series of fine black setae, no spiniform ones. Setulose areas of wing less extensive than in *curvata*, cell *1m* often only with 2 isolated small patches near apical margin, cell *2m* entirely bare. Hind margin of syntergum 1+2 distinctly produced caudad at middle. Median tergal plates 1–3 all wider (*ca.* 30: 27) than head; anterolateral lobes of plate 1 parallel to each other, anteriorly rounded, very strongly elevated, nipple-like, highest near anterior margin where it is, in side view, almost 1/2 as deep as greatest length of the plate; plate 2 shorter than 3

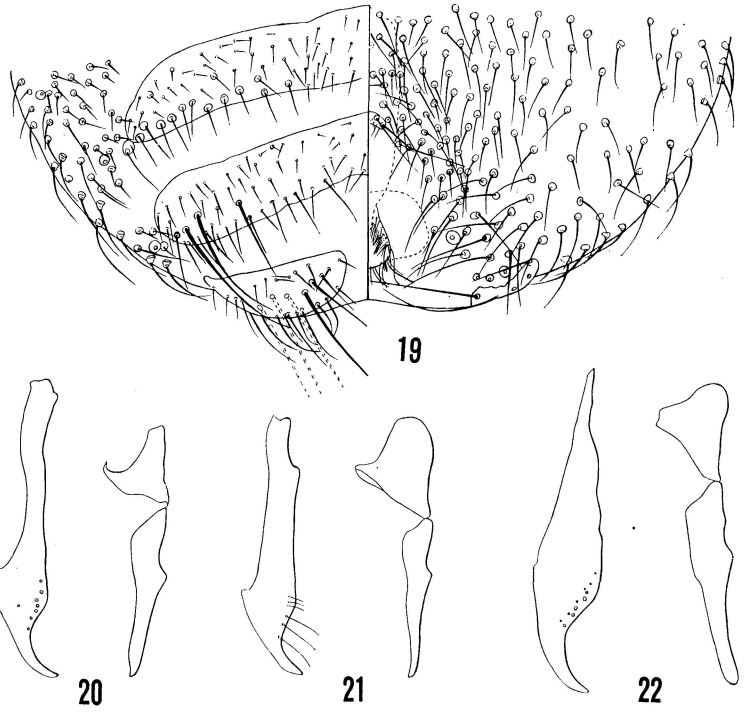


Figs. 18 A–B. *Ornithoica hirtisternum* n. sp., ♀. A, abdomen, dorsal and ventral aspects at left and light halves respectively; B, uterus, more enlarged, drawn from the same cleared specimen, ventral aspect.

and closer to 1 than to 3; plate 4 anteriorly with short narrow median slit, with 1–2 bristles at a side. Para-anal lateral plate very large, with 7–8 (rarely 5–6) long bristles. Laterite 2 (hind extension of syntergum 1+2) with few long bristles at apex. Sternum 1 soft haired, no spiniform setae on hind margin. Anchor-like warts at anterolateral corner of abdominal venter distinctly smaller than those at sides of urogenital area; membranous area before genital opening with 2 pairs of tubercles bearing bristles and spines. Other characters similar to that in *curvata*. Wing 3.8–4.0 mm long.



Figs. 18 C–D. *Ornithoica hirtisternum* n. sp., ♀ abdominal apex. C, dorso-caudal aspect; D, ventro-caudal aspect. Drawn from an engorged ♀ (holotype) preserved in alcohol. Terminology of the plates only for descriptive purposes.



Figs. 19–22. *Ornithoica* n. spp. 19, *hirtisternum*, ♂ abdomen, dorsal and ventral aspects; 20–22, ♂ genitalia, lateral aspects of penis-valve and aedeagus (for terminology, see fig. 38), drawn to same scale. 20, *submicans*; 21, *cutvata*; 22, *hirtisternum*.

Male: Hind margin of syntergum 1+2 almost straight. Abdomen with similar chaetotaxy and median tergal plates as in ♂ *curvata*; median tergal plate 3 with 1–2 bristles at

a side; at venter area immediately posterior to spiracle 2 almost bare; para-anal lateral plate with 4–5 long bristles. Wing 3.8 mm long.

Notes: This species is larger than the preceding ones and attains similar size as *unicolor* Speis., the largest species of *turdi*-group. As far as the sexual dimorphism and structural details are concerned, *hirtisternum* is apparently more advanced and more isolated than *curvata* and *submicans*. The host and distributional ranges are little known, but very probably it is confined to some endemic species or genera of birds in NW New Guinea. It is absent in our extensive collection from other parts of that subcontinent.

The **Ornithoctona plicata** group

Size large (for the genus). Face fairly wide. Postorbit hardly shorter than average width of inner orbit. Antennal process moderately long, apically recurved dorsad or dorso-ectad. Prosternal process not or hardly longer than wide at base. Wing entirely bare, at most with a very narrow setulose line on costal margin near apex. Fore leg either with long apical tibial lamina (♀) and without tibial spurs and basal tarsal comb, or, without tibial lamina but with tibial spurs and basal comb under tarsomere 1. Abdomen in ♀ without median tergal plates but a pair of small lateral setigerous tubercles before anus.

DISTRIBUTION: World-wide; 3 species (fig. 23), 2 of which are apparently confined to the tropics and subtropics and the 3rd species breeds normally also in certain temperate countries.

HOST PREFERENCE: All species are probably polyxenous.

SYSTEMATICS: Insofar as the sexual dimorphism of the fore leg and abdominal sclerotization are concerned, this group is apparently more highly specialized than the *O. australasiae* group. The *O. nitens* group is known definitely only from the ♀ sex and therefore cannot appropriately be compared. Since the prosternal process is fairly long, wings apically setulose and fore leg normal, the *nitens*-group is placed intermediate of the other two.

Besides the 3 species enumerated below, there is slight possibility that *O. orizabae* Beq.

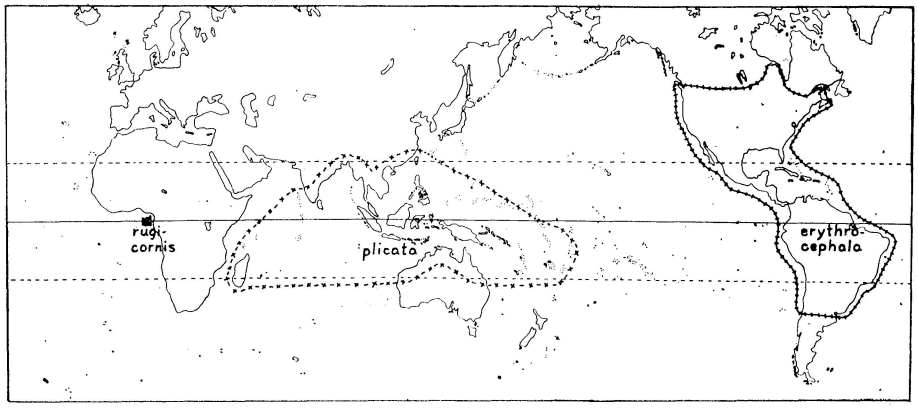


Fig. 23. *Ornithoctona plicata* group, distributional patterns and ranges of the species. Doubtful and stray records are excluded.

belongs here too. Unfortunately the latter is known solely from the unique ♂ type (pinned), the shrivelled condition of which does not permit closer examination of the abdomen. Bequaert (1954: 210) stated that it was closely related to *erythrocephala*. Since the narrow faces, long antennal processes, short postorbits and apically setulose wings in the former species and in *nitens* are similar to each other, it appears that they are of the same group and that there are no true affinities between *orizabae* and *erythrocephala*.

Of the 3 species here included in this group, *erythrocephala* seems to be the most generalized and *plicata* the most specialized. The ♂ genitalia, the little dimorphic fore leg and the presence of the ♂ median sternal plate in the former species all support this view and indicates its affinities to the *O. australasiae* group. The ♂ of *rugicornis* is unknown, but the ♀ characters obviously indicate its transitory position.

KEY TO SPECIES OF ORNITHOCTONA PLICATA GROUP

1. Fore tibia with 4 strong apical spurs but no apical lamina; segment 1 of fore tarsus ventrally with a series of stiff setae arranged like a comb at base; antennal segment 2 apically recurved dorsad, dorsally with sparse bristles which are mostly much shorter than greatest width of the segment; inner orbit about 1/2 as wide as mediovertex; abdominal venter in ♂ with a large, medially interrupted, moderately sclerotized plate before genital opening; posterior ocelli hardly farther from each other than from anterior ocellus; prosternal processes not shorter than interdistance of their apices ..... **erythrocephala**

   Fore tibia apically without spurs but a small patch of dense short setae, ♀ with strong apical lamina extending to level of apex of tarsal segment 1; segment 1 of fore tarsus without basal comb described above; antennal segment 2 apically recurved dorso-ectad and dorsally with dense bristles which are mostly much longer than greatest width of the segment; inner orbit hardly narrower than mediovertex; abdominal venter in ♂ without any trace of above-described plate ... 2

2. Antenna subtruncate at apex; prosternal processes distinctly shorter than interdistance of their apices; posterior ocelli hardly farther from each other than from anterior ocellus ..... **plicata**

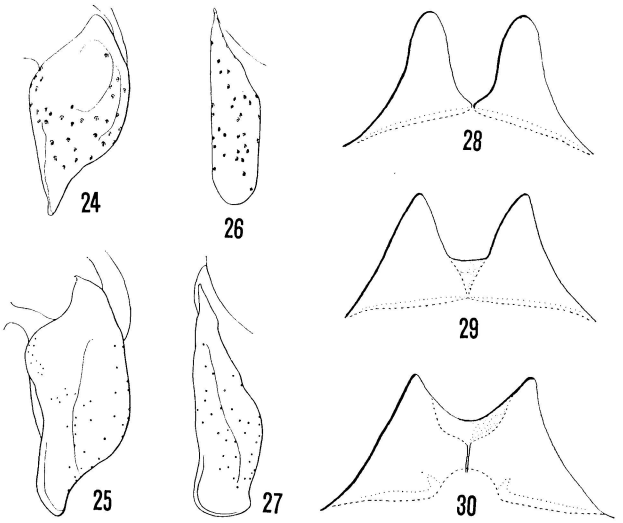
   Antenna rather narrowly rounded at apex; prosternal processes as long as interdistance of their apices; posterior ocelli 2× as far from each other as from anterior ocellus ..... **rugicornis**

Ornithoctona erythrocephala (Leach) 1818 Figs. 23, 28, 31, 36, 38.

MEXICO: 2♀♀ (KBH), "Mexico", coll. Liebmann.
COSTA RICA: 1♀ (KBH), "Costa Rica."
USA: 1♀ (KBH), New York, coll. Westermann.
PERU: 1 ♀ (STK), Chaquimayo, N. Holmgren.
COLOMBIA: 1♀ (LUN), Santa Rosa de Osos, III. 1937, G. Dahl.; 1 ♀ (LUN), Munchigen, Cauca, off *Odontophorus hyperthrus*, V. 1935; 5♀♀ (LUN), El Tambo, Cauca, II. 1938; 4♂♂, 12♀♀, 1 puparium (LUN), same data but off *Buteo leucorrhous*, II. 1939.
"AMERICA": 1♂ (OXF ex coll. Westwood), no data but with Walker's label "*americana* 1141" and an additional yellow rectangular label "*Olfersia americana*. E. Col. Saunders 1867. 10 d."

CUBA: 5 ♀♀ (CAS), Guantanamo, coll. Le Moult.

This is one of the commonest hippoboscids in the New World. As shown in the map and mentioned in the systematic list, it is widely distributed and polyxenous. The ♂ abdomen and ♂♀ abdominal terminalia have been figured by Bequaert (1954 Ent. Amer. n. ser. **34**: 187, figs. 38 B, D, E and 44 D). The ♂ genitalia differs from that of *O. plicata* chiefly in the profile shape of the penis valve which is apically straight and broadly rounded.



Figs. 24–30. *Ornithoctona plicata* group, ♀♀. 24–25, left antennal process, front view; 26–27, *id.*, lateral view; 28–30, anterior inter-coxal ("prosternal") processes. 28, *erythrocephala* Lch., El Tambo, Banca, Bolivia; 24, 26, 29, *rugicornis* n. sp.; 25, 27, 30, *plicata* Olf., Mt. Missim, New Guinea.

Ornithoctona rugicornis Maa, n. sp. Figs. 23, 24, 26, 29, 32, 34.

SÃO TOMÉ I.: Holotype ♀ (GENOVA), Vista Alegre, 200–300 m, ex *Agapornis pullaria* (Linn.), IX–X. 1900, L. Fea. Paratype ♀ (BISHOP), Agua-Ize, 500 m, ex *Onychognathus fulgidus* (Hartl.), XII. 1900, Fea. The holotype is pinned and has been determined by P. Speiser as "*O. nigricans* Leach ?" The paratype is pinned too, with abdomen detached, cleared and mounted in euparal.

Female: Length from frontal notch to hind scutellar margin 5 mm; wing 10mm. Very closely similar to *O. plicata* Olf. except the following points:

plicata Olf.	*rugicornis* n. sp.
Antennal segment 2 lacking distinct punctures, with sparse, very unevenly distributed bristles; its apex subtruncate and strongly twisted ectad.	Antennal segment 2 with coarse deep punctures and dense, rather evenly distributed bristles; its apex rather narrowly rounded, hardly twisted.
Interdistance of 2 posterior ocelli hardly greater than that of anterior and either posterior ocelli.	Interdistance of 2 posterior ocelli about 2× that of anterior and either posterior ocelli.
Bristles on antenna stiff, uniformly black.	Bristles on antenna rather fine, those on dorsal surface largely black whereas those on venter and ectal margin largely reddish.
Anepisternum slightly longer and narrower in proportion.	Anepisternum slightly shorter and wider in proportion.
Prosternal processes distinctly shorter than	Prosternal processes as long as interdistance

interdistance of their apices.	of their apices.
Apical lamina of tibia 1 blunter, broader.	Apical lamina of tibia 1 acuter, narrower.
Segment 4 of tarsus 1 more than 2× as wide as long.	Segment 4 of tarsus 1 only 2× as wide as long.
Infra-anal plate longer, with more setae.	Infra-anal plate shorter, with fewer setae.

Male: Unknown.

Besides the differences tabulated above, the abdominal dorsum of the cleared paratype of *rugicornis* is adorned with 3 small roundish median bare areas which probably indicate the sites of the disappeared terga, 3, 4 and 5 respectively; the tergum 6 is represented by a pair of roundish, strongly sclerotized plates each bearing about 4 long and 3–4 shorter bristles. These 2 characters are less pronounced in the ♀ *plicata* at hand.

The *plicata*-group is heretofore not yet found in continental Africa although it is very widely spread on the other side of the Atlantic Ocean and in the Indian and W. Pacific Oceans. The discovery of this interesting species open a wide gap for the distributional range of this species-group between the Gulf of Guinea and Mozambique Channel.

As indicated by its name, *rugicornis* can be conveniently distinguished by the roughened surface of the 2nd antennal segment. The shape of the antennae and of the prosternal processes however are more fundamental characters. They are intermediate of that in *plicata* and *erythrocephala*, and *rugicornis* probably brings closer those 2 species. Incidently, the new species also bridges the distributional ranges of *plicata* and *erythrocephala*.

Ornithoctona plicata (von Olfers) 1816 Figs. 23, 25, 27, 30, 33, 35, 37, 39.

CEYLON: 1♂ (DEI), Nalanda, det. Speiser as *nigricans*.

THAILAND: 1♀ (KBH), "Siam", III. 1935.

FUKIEN: 1♀ (DEI), Fukien, G. Siemssen, det. Bau as *doreica*.

TAIWAN: 1♀, Lintou, Penghu hsien, Pescadores Is., off *Accipiter nisoides*, (PF #10675), IV. 1961, R. E. Kuntz; 1♀, Yufoh-lee, Yangmingshan, off *Gorsakius goisagi* (PF #6284), V. 1959, Kuntz.

KURILE IS.: 1♀ (STK), Yeterofu (=Iturup) I., Shana, S. Bergman; 3♀♀ (STK), no locality, possibly from the Pacific, C. Aurivillius.

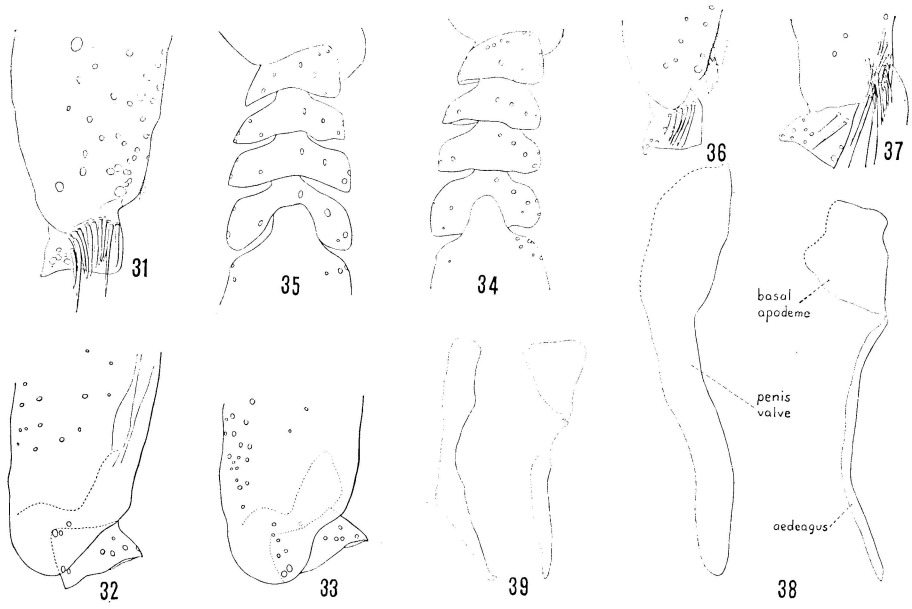
MONGOLIA: 1♀ (BMNH #75.38), purchased from Whitely.

PHILIPPINE IS.: 1♀, Macagua, Brooke's Point, Palawan, off *Treron vernans* (BBM–1079), IV. 1962, M. Thompson; 1♀, Pinigisan, Mantalingajan Rge., Brooke's Pt., Palawan, off *Gracula religiosa* (BBM–1263), IV. 1962, Thompson.

CAROLINE IS.: 1♀ (KBH), Ponape, off *Carpophaga*, labelled as from the "Ascension Is. Ponape."

SUMATRA: 1♀ (KBH), Tjali, Atjeh (Achim), coll. Klein; 2♀♀ (KBH), Sipotolon, Atjeh, coll. Klein; 2♂♂, 16♀♀ (AMS), from Biaro, Fort de Kock, Kalung (Tilatang, Pad. Bovenl.), Kalung (Kamang, Pad. Bovenl.) and Suban (Ajam), off birds #3087, 3093, 3116, 3118, 3202, 3370, 3402, E. Jacobson (1915–16).

JAVA: 2♀♀ (OXF), labelled "*Ornithomyia Columbae*. Java. (36)" and "*Ornithomyia Columbae* Wied. Java. De Haan" respectively, probably syntypes of *columbae*. 1♀ (AMS), Siangpan; 5♀♀ (AMS), Wijnkoopsbaai, III. 1908, E. Jacobson.



Figs. 31–39. *Ornithoctona plicata* group. 31–33, ♀ right fore tibia (apex) and tarsus (1st segment) ventral view showing tibial lamina; 34–35, ♀ right fore tibia (apex) and tarsus (basal segments), dorsal view; 36–37, ♂ right fore tibia (apex) and tarsus (1st segment), ventral view showing tibial brush and tarsal comb; 38–39, ♂ genitalia, lateral views of penis-valve and aedeagus. 31, 37, 38, *erythrocephala* Lch., El Tambo, Banca, Bolivia; 32, 34, *rugicornis* n. sp.; 33, 35, 36, 39, *plicata* Olf., Mt. Missim, New Guinea. Figs. 38–39 not drawn to same scale.

BORNEO: 3♀♀ (AMS), no further data.

FLORES: 1♀ (AMS), Maumere, off "wael", 1889, M. Weber.

WETTER I.: 1♂, 1♀ (AMS), coll. Schädler.

BURU I.: 1♀ (AMS), Waarseh, L. J. Toxopeus; 2♀♀ (AMS), Station 9, off *Haliastur indus* and *Tanygnathus megalorhynchus affinis* respectively, V. 1921, Toxopeus; 2♀♀ (AMS), Stations 9 & 21, 1921–1922, Toxopeus.

CERAM: 2♀♀ (AMS), VI. 1910, Van Dedem.

NEW GUINEA: 1♂, 1♀, Wau, 1030 m, off hawk (#S–175), II. 1962, J. H. Sedlacek; 1♀, Wau, off mountain pigeon (BBM–21270), VI. 1962, H. Clissold; 2♀♀, Mt. Missim, off *Aepypodius arfakianus* (BBM–20641), Clissold; 1♀, Vogelkop Penin., Kebar Valley, 550 m, ex *Lorius lory* (BBM–751), I. 1962, L. & S. Quate; 2♂♂, same data but ex *Ducula pinon* (BBM–719); 1♀ (AMS), Noordrivler, C. New Guinea, IX. 1909, Lorentz.

AUSTRALIA: 1♂ (KBH), coll. Godefroy.

SAMOA: 1♀ (STT), 1899, coll. Kraemer (#13192); 1♀ (STT), no data, but #583, possibly from the Pacific.

O. plicata has been beautifully illustrated by Ferris (1926 Sarawak Mus. J. **3** (3): 285, pl. 11 (2 e–h); 1927 Philip. Jour. Sci. **34**: 215, figs. 7–8) under the names *O. magna* Ferr. and *O. nigricans* (Lch.) respectively. For comparison, the fore legs of both sexes are here re-figured. The ♂ genitalia is heretofore undescribed. It can be immediately separated

from that of *O. erythrocephala* in having apically decurved penis-valve. The absence of the median sternal plate before ♂ genital opening also serves as a good specific character to distinguish from the latter species. Unfortunately the weak sclerotization of that plate makes it hardly observable in dried and slide specimens.

This species is also very widely spread and polyxenous but appears to be less adapted to temperate environments than does *erythrocephala*. The odd records from Mongolia and the Kurile Is. as listed above probably should be considered accidental or seasonal. There is no positive proof that *plicata* breeds regularly in the temeprate countries.

The **Lynchia meda** group

Ocelli absent, represented by median fovea on postvertex. Eyes fairly small, longer than mediovertex, broadly rounded at both ends, slightly narrowed toward posterior end, widely separated from each other but rather narrowly so from antennal pits. Postorbits shorter than average width of inner orbit, posteriorly not reaching level of postvertex. Inner orbit shining, with 2 series of soft recumbent hairs. Vibrissal (genal) area anteroventrally broadly rounded into frontal ridge. Palpus about as long as interdistance of vertical bristles. Praescutum anterolaterally with 2 oblique series of recumbent hairs. Mesothoracic spiracle dorsal, very large, about 2× as long as wide, much shorter than scutellum. Scutellum nearly 2/3 as long as scutum, furrowed medially, hind margin strongly convexly curved; scutellar bristles submedian, about as far from each other as from anterior scutellar margin. Prosternum well developed. Mesosternum anteriorly very broadly rounded. Metabasisternum posterolaterally obliquely truncate; hind margin of metafurcasternum strongly decurved, moderately notched at middle. Wings normal in shape and size; membrane bare at cells *2m+1a* (hind 1/2) and *2a*; vein 2A slightly shorter than M_{3+4}. Fore tarsus normal. Abdomen normal in sclerotization; disc of dorsum extensively bare and transversely striate, with 1 median tergal plate (tergum 3) near base; anal sclerite (tergum 6) posteriorly bilobed; laterite 3 not recognizable; urogenital openings situated very near abdominal apex.

DISTRIBUTION: Mediterranean and E. African Subregions, at present known from 1 species.

HOST PREFERENCE: Hardly known, possibly oligoxenous on Accipitridae.

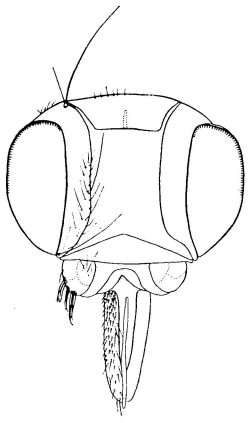
SYSTEMATICS: This is a quite distinct group and the position of scutellar bristles is unique for the genus as a whole, whereas the large and dorsal mesothoracic spiracles are shared only by the *nigrita*-group. In other respects, it is related to but easily distinguishable from that group by the size and shape of the eyes and of the scutellum, by the normal abdominal sclerotization, and by the normal position of the urogenital openings.

Lynchia meda Maa, n. sp. Figs. 40, 41.

IRAQ: Holotype ♀, Erbil Liwa nr. Salahedin, ex *Gyps fulva* (Accipitridae), 23. XI. 1954, Chas. A. Reed. Holotype in alcohol, in Chicago Nat. Hist. Mus.

Female: Color dark, legs almost uniformly brown. Eye longer (19: 16) than mediovertex. Occipital margin in dorsal view nearly straight, with 2 (1+1) pale vertical bristle. Postvertex short, shining, strongly raised, longer than greatest width of inner orbit, anteriorly truncate, with moderately long median fovea; mediovertex distinctly widened anteriorly;

inner orbit gradually narrowed anteriorly; fronto-orbital bristles (except anterior major bristle) pale, long, biseriate. Lunula shining, longer than average width of inner orbit, with no trace of median fovea; frontal notch deep, fairly wide; frontal ridge (in side view) apically extending much beyond level of antennal apices. Antenna about as wide at base as long. Vibrissal (genal) area with many short and few long stiff bristles on lower margin and inner surface respectively. Palpus hardly longer (18 : 17) than smallest interocular distance or interdistance of vertical bristles, with dense black short somewhat spine-like setae at ventrobasal area and sparse brown long slender ones at dorsoapical area. Humerus longer than wide, well defined, very prominent, with few short spiniform setae on and near anterior margin, no long bristles. Median length of praescutum subequal to that of scutum plus scutellum. Prealar and scutellar bristles about as long and stout as vertical bristle, also pale; 2 postalar bristles, shorter than other major bristles. Praescutum finely, weakly striate; striae at anterior area largely transverse, those at posterior area, longitudinal or oblique; median area behind disc smooth; hairs numerous, quite uneven in length but all recumbent and forming together oblique patch behind spiracle; anterior margin slightly depressed but distinctly incurved at middle. Anepisternum uniformly covered with sparse spiniform setae, posteriorly with a long black bristle. Scutum anteriorly almost smooth, posteriorly striate, with a moderately long bristle and tiny patch of fine suberect setae at each side; narrow strip along hind margin mat; median suture not reaching hind margin. Scutellum shorter than scutum, slightly shining, transversely striate; median furrow deep; hind margin with 2 series (1 upper and another lower) of soft hairs. Metepimerum with an oblique series of 6–7 very stout setae and some scattered soft hairs. Prosternum *ca.* 2× as wide as long. Mesosternum with 1 pair of long setae and many soft hairs. Wing long, narrow, widest at a point much distad to level of vein *rm*; vein C densely setose, gradually thickened after merging with R_1, with apical abscissa distinctly thicker than that of R_{4+5}; other veins bare; Sc moderately strong, basally slightly thickened, and in both wings of the unique type, apically meeting C; apex of R_1 lying just about level of *rm*; 1st abscissae of R_{4+5} and M_{1+2} about 3/4 as long as their respective 2nd abscissa; cell *2a* rather large, widest at a point proximad to midlength. Inner surface of fore and hind femora with a small patch of strong black setae near base. Fore and mid tarsi each with 2–1–1–0 spines on segments 1 to 4 respectively; hind tarsus 9–2–1–1. Segment 1 of hind tarsus subequal in length to 2+3+4, distinctly longer than 5; segment 2 barely wider than long; 3 transverse, slightly shorter than 2, distinctly longer than 4; 4 apically bilobed. Abdomen typical for the genus; syntergum 1+2 ("basal laterotergal sclerite") large, with pale soft hairs, laterally strongly



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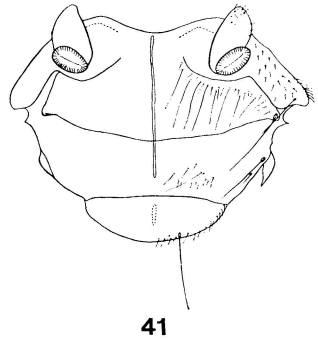

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Figs. 40–41. *Lynchia meda* n. sp., holotype ♀. 40, head in front view; 41, dorsum of thorax.

produced caudad and with rather stout black setae; median tergal plate 1 (tergum 3) rather large; anal sclerite evenly covered with short somewhat spiniform setae, posterolaterally with about 5 long bristles at a side; lateral membranous area strongly setose; abdominal venter strongly setose at base and sides; infra-anal plate excesisvely large for the genus, posteriorly deeply incised at middle. Length from frontal notch to posterior scutellar margin 2.8 mm; wing 6.7 mm long. *Male*: Unknown.

Notes: The name *meda* refers to positions of both its geographic distribution and scutellar bristles. In the British Museum, I saw 2 specimens from E. Africa and 3 from India, probably of this species. These are however unavailable for direct comparison with the unique type here described.

The **Lynchia nigrita** group

Ocelli absent, represented by short median fovea on postvertex. Eyes very small, shorter than mediovertex, pointed at fore end and narrowly rounded at hind end, widely separated from each other and from antennal pits. Postorbit about as long as average width of inner orbit, extending posteriorly about to level of postvertex. Inner orbit shining, with 1–2 series of soft hairs. Vibrissal (genal) area anteroventrally broadly rounded into frontal ridge, not separated from latter by deep sharp incision. Palpus shorter than interdistance of vertical bristles. Praescutum with few short recumbent hairs. Mesothoracic spiracle dorsal, very large, about 2× as long as wide, hardly shorter than scutellum. Scutellum hardly more than 1/2 as long as scutum, medially furrowed posteriorly truncate; scutellar bristles close to lateral corners, *ca.* 4× as far from each other as from anterior scutellar margin. Prosternum well developed. Mesosternum anteriorly truncate. Metabasisternum posterolaterally obliquely truncate; hind margin of metafurcasternum strongly decurved, rather deeply notched at middle. Wing more or less narrower than usual, cell *2m+1a* apically sometimes emarginate; membrane bare or setulose at cells *2m+1a* and *2a*; vein 2A distinctly shorter than M_{3+4}. Fore tarsus with symmetric 4th segment. Abdomen showing strong sexual dimorphism in chaetotaxy and in number and sizes of sclerotized plates; disc of dorsum extensively bare and transversely striate, with 1 median tergal plate (tergum 3) near base; laterite 3 well developed in ♀; anal sclerite (tergum 6 or syntergum 6+7) medially interrupted; urogenital openings (particularly in ♂) situated far before apex of abdominal venter.

DISTRIBUTION: Oriental Region, at present known from 3 species occurring in the Indo-Chinese, Malaysian and Philippine Subregions.

HOST PREFERENCE: Not well known, probably preferring if not confined to the Falconiformes. All 3 species are recorded here from *Microhierax* (Falconidae) and 1 of them also from *Buceros* (=*Hydrocorax*) (Bucerotidae, Coraciiformes). By implication of the similarities in the eye-size and wing-shape to *Crataerina*, members of this group are perhaps oligo- or even monoxenous.

SYSTEMATICS: The salient characters of this group are the size and shape of eyes and scutellum, the size and position of mesothoracic spiracles as well as the presence of ♀ submedian abdominal plates. Insofar as the sexual dimorphism and the abnormal eye-, wing- and scutellum-shape are concerned, this group apparently stands at the top of the whole genus. Its closest relative is the *meda*-group which is also known from the Falconi-

formes but has a more westernly distributional range. Both groups have narrow eyes and large dorsal mesothoracic spiracles but it is unknown whether the co-existence of these characters are interrelated. On the other hand, the lanceolate eyes as well as the somewhat ribbon-like wings (in *leptoptera* in particular) remind me of the genus *Crataerina* in the lower Ornithomyinae. The shifting-forward of the urogenital openings is obviously still an-

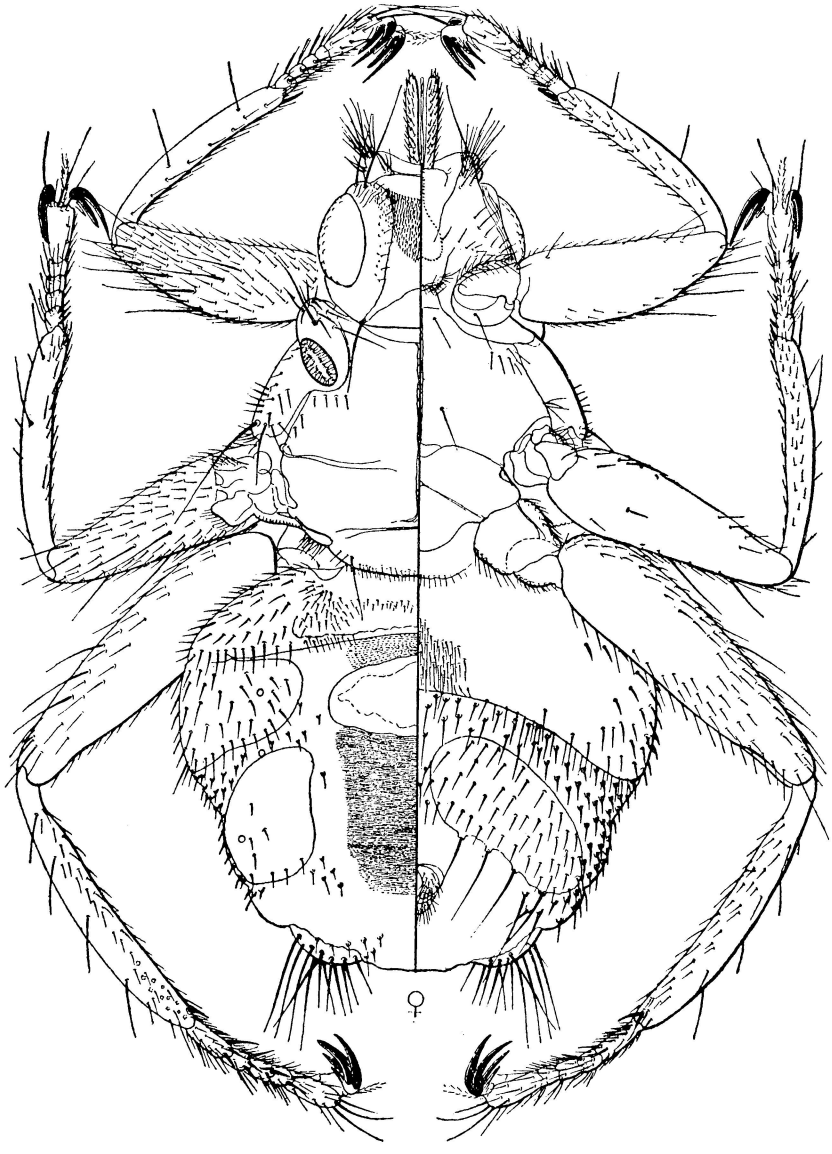


Fig. 42. *Lynchia nigrita* Speis., ♀, wings removed. (After Ferris 1925b: 334, fig. 3; originally labeled as *Ornithoponus sartus* Ferr.).

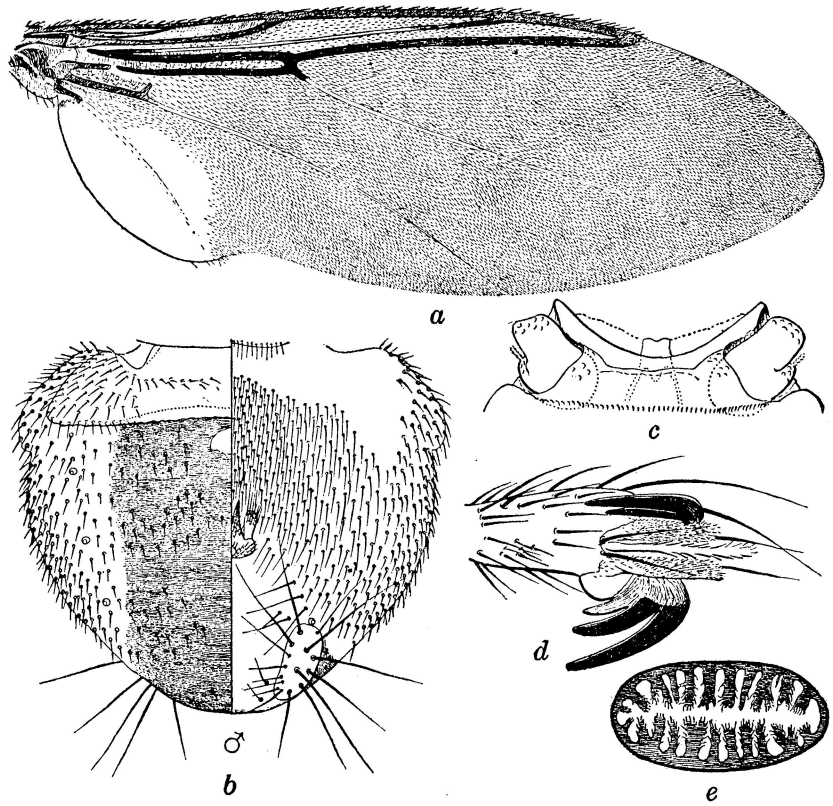


Fig. 43. *Lynchia nigrita* Speis. (After Ferris 1925b: 335, fig 4; originally labeled as *Ornithoponus sartus* Ferr.). a, ♀ wing; b, ♂ abdomen; c, clypeal region; d, last tarsal segment; e, mesothoracic spiracle (originally labeled as "last segment of tarsus").

other device to meet certain special ecological needs. The function of this device is nevertheless not clear.

Key to species of Lynchia nigrita group

1. Apical margin of cell *2m+1a* distinctly concave and distinctly longer than vein 2A; cell *2a* only *ca.* 3× as long as wide; abdominal venter in ♀ with 2 large oblique plates anterolateral to urogenital openings..... **nigrita**
   Apical margin of cell *2m+1a* weakly convex or nearly straight, distinctly shorter than vein 2A; cell *2a* about 5–9× as long as wide 2
2. Wing unusually narrow, *ca.* 3.7× as long as wide; median tergal plate large, in ♀ *ca.* 2× as long as scutellum, in ♂ hardly shorter than scutellum; abdominal venter in ♀ without large oblique plate anterolateral to urogenital openings..... **leptoptera**
   Wing nearly normal in shape, *ca.* 3× as long as wide; median tergal plate in both sexes not more than 1/2 as long as scutellum; abdominal venter in ♀ with large oblique plate anterolateral to urogenital openings..... **modesta**

Lynchia modesta Maa, n. sp. Figs. 44, 46, 48, 50, 52, 53.

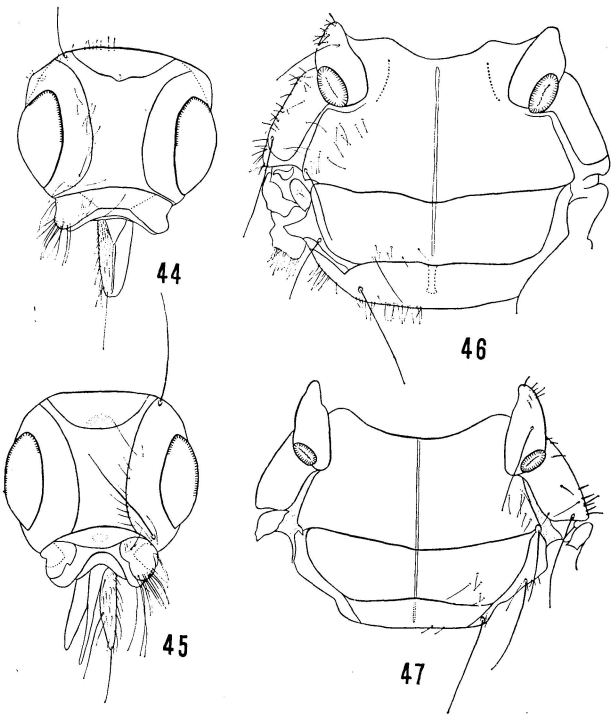
SUMATRA: Holotype ♀, Rimbo Pengadang, ex *Microhierax fringillarius* Drapiez [*M. caerulescens horsfieldi* Lesson], VI. 1916, E. Jacobson. Allotype ♂, paratypes 2 ♀♀, same data but Tandj. Andalas, V. 1914.

THAILAND: Paratype ♀ (CNHM), Pracuap Khiri Khan, Ban Klua Klang, ex *Microhierax caerulescens*, 9. XII. 1952, H. G. Deignan.

Holo- and allotypes, partly mounted on slides and partly pinned, in Amsterdam Mus.; paratypes in Bishop and Chicago Nat. Hist. Mus.

Female: Dark-colored; legs almost uniformly brown, tibiae dorsally each with a narrow blackish streak. Occipital margin in dorsal view gently convexly curved, with 1–2 pale vertical bristles of similar length at a side. Postvertex short, only as long as lunula and as postorbit, anteriorly convexly curved, with distinct median fovea; mediovertex narrowest near midlength, fore end narrower than hind end; inner orbit hardly widened anteriorly, anterior 1/2 with few soft hairs and coarse oblique striae on and near inner margin; major fronto-orbital bristles also pale. Lunula shining; with decurved fore margin; frontal ridge in side view extending much beyond level of antennal apices. Antenna longer than wide at base. Vibrissal area wide, with a column of dense short bristles along lower margin and some long stiff ones on inner surface. Palpus shorter (13 : 16) than interdistance of vertical bristles, basally with rather dense and stiff setae, apically with sparse but longer ones. Humerus much longer than wide, well defined, with 1 rather long bristle and 7–10 ordinary and spiniform setae; inner margin decurved, separated from praescutum proper by deep wide furrow; mesothoracic spiracle more than 2× as long as wide. Mesonotum striate throughout, striae densest at anterior part of praescutum and sparsest at lateral part of scutum; small patches of short recumbent hairs present beford pre-alar and around prescutellar bristles; anterior praescutal margin (between humeri) decurved, weakly sinuate, little overlapped by head. Pre- and post-alar bristles long, pale, weak; prescutellar bristles also weak, 1 at a side; anepisternum with 1 long bristle, several ordinary and spiniform setae (largely on outer margin) and few soft hairs. Scutellum feebly obliquely striate; median furrow wide, shallow; hind margin densely fringed with soft hairs; scutellar bristle black, strong. Metapleurum with, in addition to scattered soft hairs, about 10 stout setae arranged in an oblique series. Prosternum well defined, trapezoid, more than 2× as wide at base as long, with about 10 setae near anterior margin. Mesosternal setae all pale, fine, 1 pair at anterior end, 2–3 pairs near hind margin at middle, 4–6 setae each between fore and before mid coxal cavities. Wing long, moderately wide, widest at about level of vein *rm*, setulose all over except cells *2m+1a* (hind 1/2) and *2a*; vein C densely setose, abscissae 1 and 2 about as thick as R_{4+5}; R_{4+5} apically with 4–5 setae; other veins bare; Sc (in all specimens examined) free-ended, not apically meeting costal margin; 1st abscissae of R_{4+5} and M_{1+2} *ca.* 2/3 as long as their respective 2nd abscissa; apical margin of cell *2m+1a* weakly convex, *ca.* 3/5 as long as vein 2A; *2a* nearly 5× as long as wide, widest near midlength; alula nearly 3× as long as wide. Fore tarsus with segment 1 distinctly longer than 2+3. Segments 1–4 of fore and mid tarsi each with 2–1–1–0 spines respectively; that of hind tarsus, 4–2–2–1. Syntergum 1+2 large, apparently composed of 2 plates, plate 1 (in cleared specimens) separated from 2 by heavily sclerotized borderline, with some short fine setae at posterolateral corner; plate 2 embracing 1, more strongly setose. Disc of abdominal dorsum extensively bare, transversely striate; median tergal plate

only 1/2 as large as scutellum, much smaller than in *nigrita*. Anal sclerite widely divided into lateral plates, each bearing 8–12 long bristles and some ordinary setae; area around spiracle 5 forming weakly sclerotized plate; no sclerotized plate around spiracle 6; laterite 3 more weakly sclerotized dorsally than ventrally where it is not, as in *nigrita*, merged into synsternum 1+2. Setae on lateral membranous area hardly longer, stronger than those on disc of abdominal venter. Venter somewhat uniformly setose, bare near base and about urogenital openings, anterolateral to which are 2 (1+1) large oblique sclerotized plates (possibly representing tergum 7); an oblique series of 4–5 long stiff bristles present on or very near hind margin of those plates. Supra-anal plate finely setose, apically bilobed; postgenital plate very large, medially interrupted; pregenital plate strong, with apical lobe at middle. Length from frontal notch to hind scutellar margin 2.5 mm, wing 5.5–5.8 mm long.



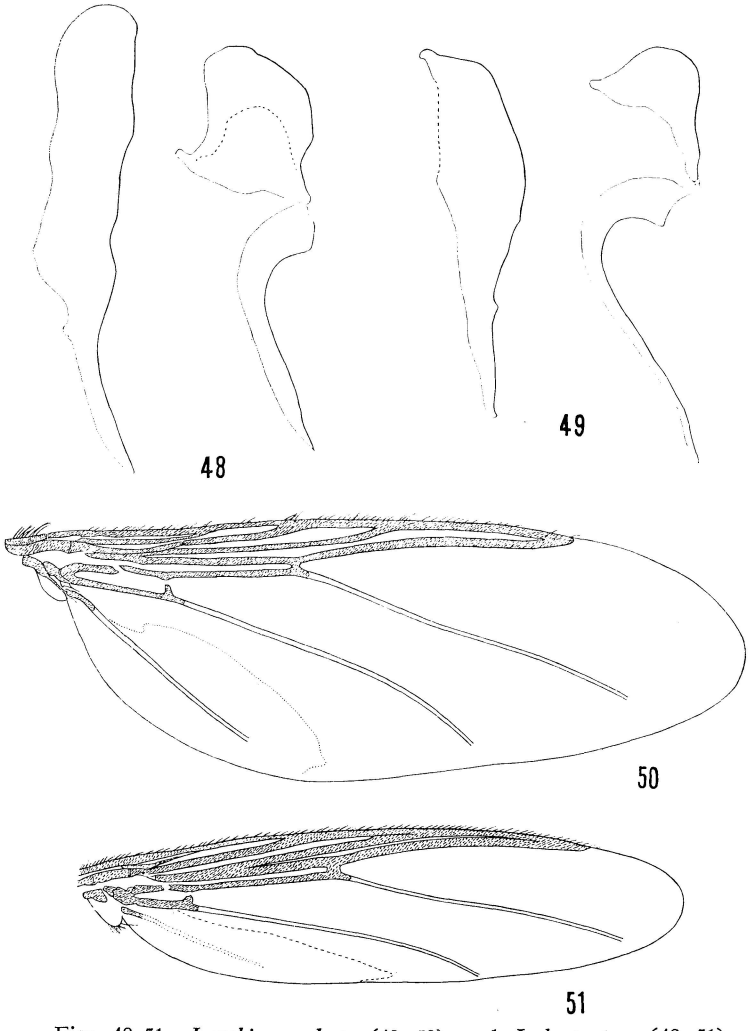
Figs. 44–47. *Lynchia modesta* (44, 46) and *L. leptoptera* (45, 47) n. spp. ♀♀. 44–45, head in front view; 46–47, dorsum of thorax.

Male: Similar. Spine formula of fore, mid and hind tarsi 2–1–1–0/2–1–1–0/2–2–1–1. Abdomen different, more densely setose, median tergal plate very small, striate area of dorsum sparsely setose, no laterites and oblique ventral plates; lateral plates of anal sclerite small, anteriorly and discally with few long bristles. Length from frontal notch to hind scutellar margin 2.5–2.6 mm, wing 5.4 mm long.

This species is apparently the most generalized of the group. The name *modesta* is given in allusion to the normal shape of wings and to the small median tergal plate. By these 2 characters, *modesta* can be immediately separated from the 2 species enumerated below. From the available host data, the species is possibly monoxenous on *Microhierax*.

Lynchia nigrita (Speiser) 1905 Figs. 42, 43.

This species has been described and ingeniously illustrated by Ferris (1925 Philip. Jour. Sci. **28**: 333–336, figs. 3–4) under the name *Ornithoponus sartus* Ferr. For completeness, Ferris' figures are here reproduced. The ♂ genitalia is undescribed. Besides the types *nigrita* and *sartus*, at the Genova Mus. and Stanford Univ. respectively, I did not see any fresh material in collections. The only published host records are by Ferris (*l. c.*), from *Microhierax meridionalis* (Falconidae) and *Buceros semigaleatus* (Bucerotidae).



Figs. 48–51. *Lynchia modesta* (48, 50) and *L. leptoptera* (49, 51), n. spp. 48–49, ♂ genitalia, lateral views of penis-valve and aedeagus (for terminology, see fig. 38); 50, ♂ wing; 51, ♀ wing with broken lines indicating extent of setulose areas.

Lynchia leptoptera Maa, n. sp. Figs. 45, 47, 49, 51, 54, 55.

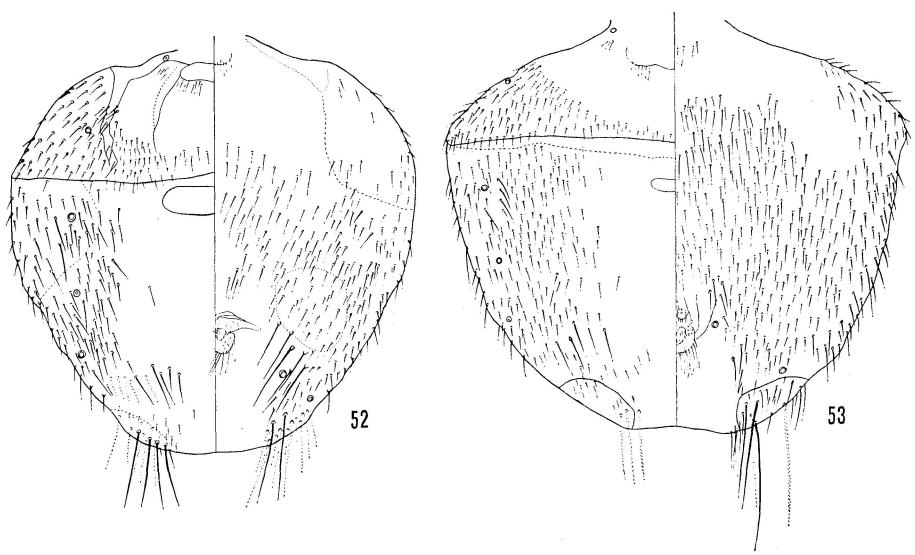
THAILAND: Holotype ♀, paratype ♀, Nakhon Ratchasima, Sikiu, Pok Chong 4, xe bird (#R. E. 2958), 16. IX. 1953, R. E. Elbel; allotype ♂, Muang Nan, Pang Nam Un, ex *Microhierax caerulescens*, 25. I. 1953, H. G. Deignan. Holo- and allotypes, in alcohol and on slides, in Chicago Nat. Hist. Mus.; paratype in Bishop Mus.

Female: Dark-colored, all legs dorsally darker than laterally and ventrally. Major bristles all black and strong. Occipital margin with 1 vertical bristle at a side. Postvertex much longer than lunula, anteriorly weakly convexly curved (or weakly bilobed), flat-

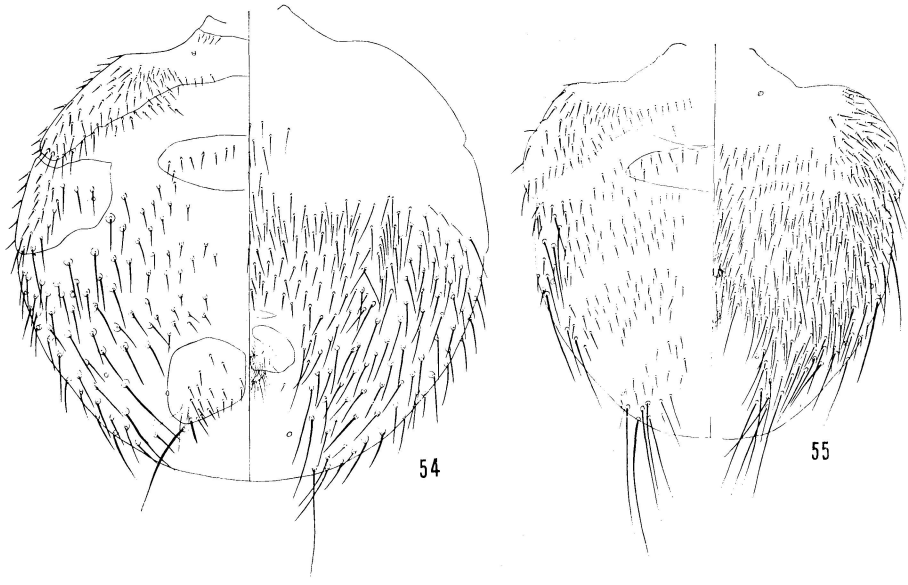
tened and with obscure median furrow. Palpus much shorter (11 : 17) than interdistance of vertical bristles. Praescutum and scutum uniformly, densely striate, scarcely with soft hairs; anterior part of praescutum strongly depressed and much overlapped by head. Scutellum alutaceous, with hardly definable median furrow. Prosternum 4× as wide at base as long, with a patch of 5–6 black short setae at a side. Wing unusually narrow, rather even in width, 3.7× as long as wide; setulose area as in figure, slightly less extensive than in *meda*; Sc very weak; abscissa 1 of M_{1+2} slightly shorter (40 : 46) than 2; 2A hardly definable at apical 2/3; apical margin of cell *2m+1a* almost straight; *2a* about 9× as long as wide; alula only 1.5× as long as wide. Fore and mid tarsi each with 2–1–1–0 spines on segments 1–4; hind tarsus, 9–2–1–1. Syntergum 1+2 small, uniform in texture. Median tergal plate large, 2× as long as scutellum, about as large as that in *nigrita*. Anal sclerite dorsal, very large, quite narrowly interrupted along median line, largly bare, hind margin with 2 strong long bristles and *ca.* 10 much shorter ones. No sclerotized plates around spiracles 5 and 6. Laterites 2 and 3 heavily sclerotized, strongly setose, well defined both dorsally and ventrally, 2 narrow, 3 broad. Setae on lateral membranous area much longer, stronger and with larger basal papillae than those on disc of abdominal venter. Venter lacking oblique plates and oblique series of long bristles found in 2 preceding species. Other characters as in *modesta* described above. Length from frontal notch to hind scutellar margin 2.3 mm, wing 4.6 mm long.

Male: Similar to ♂ *modesta*. Setulose area of wing extending slightly beyond vein 2A; vein 2A fairly strong. Spine formula of fore, mid and hind tarsi 2–1–1–0/2–1–1–0/9–4–3–2. Praescutum anteriorly hardly overlapped by head. Median tergal plate large; lateral plate of anal sclerite large, posteriorly with *ca.* 8 long bristles. Length from frontal notch to hind scutellar margin 2.6 mm, wing 4.6 mm long.

As suggested by its name, this species is unique for the higher Ornithomyinae (*Lynchia*



Figs. 52–53. *Lynchia modesta* n. sp., abdomen, dorsal and ventral aspects at left and right halves respectively. 52, ♀; 53, ♂.



Figs. 54–55. *Lynchia leptoptera* n. sp., abdomen, dorsal and ventral aspects at left and right halves respectively. 54, ♀; 55, ♂.

and *Olfersia* complex) in having somewhat ribbon-like wings. These wings are probably functional and the insect apparently a very weak flier. The number and relative size of the abdominal plates in *leptoptera* are much different from those in the 2 preceding species. It is however interesting to note that the only known host is the same species as that of *modesta* but that the distributional ranges of *leptoptera* and *modesta* appear non-overlapping. The former species is found in northern and central Thailand (14° to 18° N. Lat.) whereas the latter, in Peninsular Thailand (12° N. Lat.) southward to Sumatra.

II. LIST OF HIPPOBOSCIDAE IN RONDANI'S PRIVATE COLLECTION

Among Dipterists of the 19th century, Camillo Rondani (1807–1879) (for biography, see 1879 Ent. Mon. Mag. **16**: 138, Zool. Anz. **2**: 600, Naturaliste **1**: 143; 1880 Entomologist **13**: 120; 1881 Ann. Accad. Agr. Torino **23**: 129–153; 1885 Bull. Soc. Ent. Ital. **17**: 149–162) is one of the most eminent and prolific writers. For Hippoboscidae, he (1863, 1878, 1879) described as new not less than 5 genera and 26 species from many parts of the World. His collection is known to have been scattered in Bologna, Firenze, Genova, Milano, Napoli, Parma, Pavia and Torino museums, but the types and other specimens of his Hippoboscidae are now chiefly in the Museo Zoologico dell Universita di Firenze and the Museo Civico di Storia Naturale di Genova. Those at the latter institute have been re-examined and reported upon by P. Speiser (1904, 1905), G. F. Ferris (1929) and J. Bequaert (1951) and listed by D. Guiglia (1957). On the other hand, those at Firenze seem to have never been seen by any subsequent worker in this group and therefore the listing of all specimens now existing there might be worthwhile.

The Hippoboscidae at the Firenze Museum form a part of Rondani's private collection

and have been very well cared for; nearly all specimens are clean and perfect, only a few have suffered damage by museum pests. They are almost entirely pinned (a few glued on cards) and are, along with Braulidae, Streblidae and Nycteribiidae, contained in the drawer ("cassa") No. 66, which is labeled on the outside as "*Braula* Nitz. — *Hippobosca* Latr." Each specimen bears a serial number printed in red letters on an elliptical label. Usually no host or locality data are on the pin. Each genus or species has a cabinet label in Rondani's handwriting, and the generic and specific cabinet labels are placed respectively before and after the specimens involved. The arrangement of the genera and species in the drawer is presumably Rondani's own but there are some irregularities indicating that the collection might have been merged together from several different series before attaining the present state. For instance, one of the genera (*Chelidomyia*) has 2 cabinet labels; several species (Nos. 3383, 3391, 3392–3, 3394–5, 3411, 3413, 3415) each have 2 or more cabinet labels (often slightly different from each other in format or spelling); specific cabinet labels are quite irregular, some with generic and author's names, some not; as for his own name, it was abbreviated either as "n.", "m.", "R.", "Rnd." or "Rndn."; one of the specific labels (No. 3381) was left blank; the label "*Olfersia amboina* n." (No. 3389) lacks a separate generic cabinet label but is placed under *Myiophthiria*.

For the privilege of studying this collection, I am much obliged to Prof. Vinceneo Baldasseroni, Direttore of the Museo and Prof. Benedetto Lanza of the Istituto di Zoologia of the same University. And for information and other courtesies during my brief visit, my thanks are due to Signore Martelli Antonio of the Museo. The arrangement of the genera and species and spellings of the labels given below strictly follow what I found in October 1962 in this collection.

Genus "**Melophagus**" [Latr.]

3380 "*Melophagus ovinus*" [no author's name]. 1♂, 2♀♀; the ♂ labeled "Losoner. 1867. 5."

3381 [cabinet label blank]. 2♂♂; one of them labeled "Piem." [Piemonte, NW Italy]; both referable to *M. ovinus* Linn.

3382 "*Melophagus ovinus mexicanus*" [no author's name]. 1♂, 2♀♀ and 1 damaged specimen (abdomen missing), all referable to *M. ovinus*. The name *M. ovinus mexicanus* has never been published by Rondani and is not to be confused with either *Lipoptena depressa* var. *mexicana* Twnd. 1897 or *L. mexicana* Rndn. (*in litt.*, see NO. 3385, below).

Genus "**Lipoptena** Nitz."

3383 "*Lipoptena cervi* ♀" [no author's name]. 1 de-alate ♀.

3383 "*cervi* (sic) Nitz. ♂." Actually 1♂, 1♀, both alate.

3384 "*capreoli* [no author's name]. In Graecia ... Ins. Cypri." 1♂, 1♀, both de-alate, labeled "Cipro"; the ♀ was selected by me as lectotype.

3385 "*Lipoptena mexicana* n." 1 de-alate ♀, glued on card, labeled by me as holotype of *L. mazamae* Rndn. This is the only specimen of Neotropical *Lipoptena* in the Rondani collection at Genova and Firenze museums. Rondani never published the name *L. mexicana* and his *L. mazamae* was stated to have been from Central and South America, off

Cervus mexicanus [*Odocoileus virginianus mexicanus*]. Presumably at first he named the Mexican material as *L. mexicana*; on receiving additional specimens of this species from countries other than Mexico, he abandoned the name *mexicana*, published it as *mazamae*, but did not change the cabinet label accordingly.

Genus "**Myiocoryza**" [Rndn.]

3386 "*Nabidoides* n. *ligaoides* (sic) m." 1♀, glued on card, with printed label "Amboina. 1878. O. Beccari", labeled by me as paratype. (Lectotype in Genova Mus.) The name *Nabidoides* has never been published and it is uncertain whether it was originally intended for a genus or species. The name *ligaoides* was published as *lygaeoides* which is the correct spelling.

Genus "**Myiophthiria** R." [Rndn.]

3387 "*rib.* Rnd. *reduvioides* Rnd." 1♂, paratype (lectotype in Genova Mus.). I am unable to interpret the meaning of "*rib.*"

3388 "*capsoides* n." 2♀♀ and 1 damaged specimen (abdomen mutilated), one of the ♀♀ was selected by me as lectotype.

[3389 "*Olfersia amboina* n."] No specimen, no pin-hole immediately before this cabinet label, and there is no specimen bearing the serial no. 3389 in the entire collection. Perhaps this is the streblid which Rondani later published as *Brachytarsina amboinensis*. The unique type of *B. amboinensis* is in Genova Mus.

[3390 "*Strebla mexicana* Rnd."] 1 specimen, type, glued on card, heavily coated with dirt. The identity of this species and the sex of the type can not be ascertained until the latter is cleaned or cleared.

Genus "**Chelidomyia** m. **Stenopterix** (sic). **Oxypterum.**"

3391 "*Stenopterix* (sic) *hyrundinis* (sic) L." 1♂. Both generic and specific names were misspelled.

3391 "*Hirundinis* Lin. ♂." 2♂♂. This and the following 7 series are under a separate cabinet label "*Chelidomyia* Rnd."

3392 "*cypseli* m. ♀. ano spinoso." 1♀ (fed), selected by me as lectotype. Synonym of *Crataerina hirundinis* Linn.

3393 "*cypseli* Rnd. ♂." Actually 1 unfed ♀ (not ♂).

3394 "*pallidum* L. ♂. *Hirundo rustica.*" 1♂ (damaged), 1♀. The "L." here stands for either Latreille or Leach, not Linnaeus.

3395 "*pallida* L. ♀." 1♂, 1♀, not both ♀♀ as Rondani assumed.

3395 "*Anapera pallida* L. In avibus." 2♂♂, 3♀♀.

3395 "*Anapera pallida* L." 4♀♀.

3396 "*melbae* Rnd." 2♀ paratypes (lectotype in Genova Mus.), the 1st one was labeled "Capraja. 12. VIII. 75. Violanto" and "Presa su *Cypselus melba.*" The 2nd specimen bears only the serial number.

Genus "**Ornithomya** Latr."

3397 "*Ornithomya avicularia*" [no author's name]. 2♂♂.

3398 "*fringillina* Crt. *tenella.*" 1♂, 1♀; both referable to *O. biloba* Duf. as interpreted by Bequaert. *O. tenella* Schin. is generally accepted as a synonym of *O. biloba.*

3399 "*gestroi* m. su *Falco Eleonorae* Rnd." 1♂, type, labeled "Galita. Agosto 1877. Violanto" and "*Falco Eleonorae.*" Assignable to *Ornithophila.*

3400 "*metallica* Schml." 1♀. The "Schml." here stands for Schummel 1833 who did not publish any description. The name *metallica* dated from Schiner 1864 and is referable to the genus *Ornithophila.*

3401 "*Ornithomyia fusciventris* Wd. *Pyrangina* m. Mexico. *testacea* Macq." 1♀, referable to the genus *Ornithoctona.* The name *Ornithomyia pyrangina* Rndn. has never been published, whereas *O. testacea* Macq., as Rondani correctly interpreted, is a synonym of *O. fusciventris* Wdm.

3402 "*Ornithomya hatamensis* Rnd." 1♀, type, "N. Guinea. Hatam. VI. 1875. Beccari." Synonym of *Ornithoctona plicata* Olf.

3403 "*pyrrocephala* (sic) m. Mexico." 4♀♀, one of them was selected by me as lectotype of *O. bellardiana* Rndn. which is the only "*Ornithomya*" species of Mexico described by Rondani and is a synonym of *Ornithoctona erythrocephala* Lch. Rondani did not publish the name *pyrrocephala*, but *bellardiana* instead. This is a case similar to that of *Lipoptena mexicana* against *L. mazamae* in having an unpublished name on the cabinet label and a different name published in the original description for the same species. A 5th ♀ in the Genova Mus. is from the same series and is the type of *O. pyrrhocephala* (emended for *pyrrocephala*). The latter was first published and described by Speiser (1904a: 344) and hence its authorship must be credited to him, instead of to Rondani.

3404 "*Ornithoecia* (sic) n. *Beccariina* n." 2♀♀, (1 of them in pregnancy) glued on cards, paratypes (lectotype in Genova Mus.).

Genus "**Ornithophila** Rnd."

3405 "*vagans* Rnd." 1♂ (newly emerged), type. Synonym of *Ornithophila metallica* Schin.

Genus "**Olfersia** Wd."

3406 "*botauri* mihi. Etr. [Etruria]." 1♀ (newly emerged), type, labeled "Liguria" on pin. Synonym of *Lynchia albipennis* Say. The locality and host given in the original description are central Italy, off *Ardea purpurata.*

3407 "*garzettae* m. It. sup. [Italia superiore]." 1♀ (pregnant), type. This is the *Pseudolynchia rufipes* Mcq. sensu Beq. 1954. The locality given in the original description is Insubria, Italy.

3408 "*falcinelli* m. Melita [Malta]. Creta." 1♀ (unfed), type. Synonym of *Pseudolynchia canariensis* Mcq. The original description gave Melita as the only locality.

3409 "*ardeae* Macq. Etruria." 1♂, 1♀. The ♀ labeled "Sull' *Ardea stellaris.* 22. 3. 1870. Genova. Denegri.", the ♂ has no label except the serial number. Both referable

to *Lynchia albipennis* Say.

3410 "*Olfersia macquartii* m. Nova Grenada." 1♂, type. Synonym of *Lynchia nigra* Perty.

Genus "**Hippobosca**" [Linn.]

3411 "*equina* L. ♂." 2♂♂, one labeled "Algeria", another "Losoner. 2. 7. 70."

3411 "*Hippobosca equina* L." 2♂♂, one labeled "Espana. Oct. 73", another "*Canis familiaris*. Jaci Reale [Aci Reale, Sicily]. 1863. D. Ardissone."

3411 "*Hippobosca equina* L." 2♀♀.

3412 "*taurina* Rnd." 1♀ (pregnant), type, "Stenano G. F. 3. 9. 70", seriously damaged by museum pests at right half of face including eye, apex of scutellum and base of abdomen. Synonym of *H. equina* Linn.

3413 "*canina* Rnd. ♀" 1♀ (pregnant), paratype (lectotype in Genova Mus.). Synonym of *H. longipennis* Fabr.

3413 "*Hyppobosca* (sic) *canina* Rndn." 1♀, paratype.

3413 "*Hippobosca canina* Rndn. ♂." 1♂, 1♀, paratypes; abdomen of the ♀ has been rather seriously damaged and probably this is why Rondani mistook it as ♂.

3414 "*Hippobosca camelina* Savign. affina." 1♀, "Bigot", "83. *Hippobosca camelina* Leach. Oran."

3415 "*Hippobosca bactriana* Rnd. Persia." 1♂, 1♀ paratypes (lectotype in Genova Mus.), both labeled "Massauah, April 1870. Beccari." Synonym of *H. camelina* Lch.

3415 "*bactriana* Rnd. Persia." 1♀, paratype, same data as in above series.

3416 "*Hippobosca aegyptiaca* Macq. Persia." 1♂, 1♀, "Massauah, April 1870. Beccari", referable to *H. variegata* Meg.

As listed above, 19 of the 26 nominal species of Hippoboscidae described by Rondani have their types or paratypes now conserved at the Firenze Mus. Their names and serial numbers are: *bactriana* 3415, *beccariina* 3404, *bellardiana* 3403, *botauri* 3406, *canina* 3413, *capreoli* 3384, *capsoides* 3388, *cypseli* 3392–3, *falcinelli* 3408, *garzettae* 3407, *gestroi* 3399, *hatamensis* 3402, *lygaeoides* 3386, *macquartii* 3410, *mazamae* 3385, *melbae* 3396, *reduvioides* 3387, *taurina* 3412, *vagans* 3405. The collection also contains several unpublished manuscript names, *viz.*, *mexicanus* (*Melophagus*) 3382, *mexicana* (*Lipoptena*) 3385, *Nabidoides* 3386, *amboina* (*Olfersia*) 3389, *pyrangina* 3401, *pyrrocephala* 3403. As a summary, the genera and species of Hippoboscidae in the entire collection may be re-arranged, according to the nomenclature and sequence of order as suggested in this paper, as follows:

Ornithoica beccariina Rndn. 3404.

Ornithophila gestroi Rndn. 3399—**O. metallica** Schin. 3400, 3405.

Ornithomya avicularia Linn. 3397—**O. biloba** Duf. 3398.

Crataerina hirundinis Linn. 3391 (in 3 series), 3392, 3393—**C. melbae** Rndn. 3396—**C. pallida** Latr. 3394, 3395 (in 2 series).

Myophthiria capsoides Rndn. 3388—**M. lygaeoides** Rndn. 3386—**M. reduvioides** Rndn. 3387.

Ornithoctona fusciventris Wdm. 3401—**O. erythrocephala** Lch. 3403—**O. plicata** Olf. 3402.

Lynchia albipennis Say 3406, 3409—**L. nigra** Perty 3410.

Pseudolynchia canariensis Mcq. 3408—**Ps. garzettae** Rndn. 3407.

Hippobosca equina Linn. 3411 (in 3 series), 3412—**H. longipennis** Fabr. 3413 (in 3 series)—**H. camelina** Lch. 3414, 3415 (in 2 series)—**H. variegata** Meg. 3416.

Lipoptena capreoli Rndn. 3384—**L. cervi** Linn. 3383 (in 2 series)—**L. mazamae** Rndn. 3385.

Melophagus ovinus Linn. 3380, 3381, 3382.

III. LIST OF NON-EUROPEAN HIPPOBOSCIDAE IN BIGOT COLLECTION

Jacques Marie Frangile Bigot (1818–1893) (for biography, see 1893 Bull. Soc. Ent. France **1893**: 187; Ent. Mon. Mag. **29**: 145) was one of the major 19th century contributors to the study of Hippoboscidae. His collection of them (and other Diptera) first went to the hands of G. H. Verrall and is now in the possession of Mr. J. E. Collin at Newmarket, Suffolk, England. It contains types not only of species described by himself but also those by Courtiller, Janson and Macquart and therefore its importance in the systematics of the Hippoboscidae is hardly surpassed by any other personal collections. Speiser (1902) has re-examined the collection and redescribed some of the types contained therein, whereas Bequaert (1954), after studying it alone on several occasions and together with Mr. Collin, published brief synonymic notes. However, there exists no published complete list of the species contained in the collection. The following one may be useful to people interested.

All except one species of the non-European hippoboscids in the collection are pinned. They are conserved in 2 wood-topped boxes, and arranged under 5 genera and 44 nominal species plus 3 specimens not named by Bigot and not placed in order. Considering the time elapsed, the collection is in fairly good condition but unfortunately most of the specimens have been heavily coated with mold. Bigot usually did not attach collection-data and determination labels on individual specimens. But there are now in the boxes several kinds of labels which may require some explanation:

a. Bigot's cabinet labels—The generic and specific cabinet labels were placed before and after each series of specimens, and are of yellow and white thick paper respectively. They are 14×41 mm in size and printed with black lines (*cf.* W. Horn & Kahle 1935 Ent. Beihefte Berlin-Dahlem **2**: pl. 11, fig. 1). All are in the very characteristic handwriting by Bigot (his "B" looks like "R"; "d", like "ct", and so on). The place names were added at the lower left corner of the specific cabinet labels. For Macquart's species, Bigot generally added, at the lower right corner of his cabinet label, "D. Su. nomint.", "Suité" or the like after the word "Macq." But these will be omitted in the following list.

b. Macquart's determination labels—These are of thin paper and are not uniform in size. Some (Nos. 6, 15, 31, 33) are attached on the pins, whereas others have been glued by Bigot on his cabinet labels, on which Bigot added the place names etc.

c. Round color labels—These are 10 mm in diameter and exactly the same as those to be found at the Paris Mus. on certain old specimens. The upper side is colored (green for Oriental species, purplish for African, orange for Australasian, dull brown for S.

American and yellowish for N. American) and is usually blank. The lower side is white and written (presumably by Verrall) with scientific names, for instance, "*H. calops*. Col. Bigot." Nearly all specimens in the collection bear such color labels which were most probably put on by Bigot.

d. Speiser's determination labels—These are of thin paper and *ca.* 8× 15 mm in size. They were written (probably by Verrall, not by Speiser himself) as "*H. maculata* Leach t. Speiser 1902" and the like. Nearly all specimens in the collection have such labels. On the other hand, Bequaert did not attach any labels to the specimens.

The arrangement of the genera and species is presumed to have been by Bigot after publishing in 1885 the most important one of his articles on this family. When I studied the collection in August 1962, some irregularities were noted. Several of the nominal species (such as *impressa* Bigot, *laticornis* Mcq.) were each placed in 2 separate series; others (such as *fuscipennis* Bigot), not under appropriate genera; still others (such as *geniculata* Bigot), even without appropriate cabinet labels; and many of the cabinet labels were each with several pin-holes. Since the collection has been possessed and re-examined by several dipterists, it seems not impossible that the present arrangement is slightly different from that left by Bigot. For the privilege of studying this important collection, I have the honor to acknowledge my sincere gratitude to the present owner, Mr. Collin, for his generosity, and to Mr. H. Oldroyd for his kindness in arranging for the specimens to be temporarily borrowed for my study. The type of *Olfersia minor* Bigot is not in the collection but at the Paris Mus.; that of *Olf. maura* Bigot is conserved separately in the Palaearctic hippoboscids which I did not have the chance to examine. The order of arrangement and the wording on cabinet and other labels in the following list are in accord with that seen by me. The serial numbers are mine.

"G. [Genus] **Hippobosca** Linn."

1. "*H. calops* (sic) J. Bigot. Ceylan." 1♂, type. Synonym of *H. variegata* Meg. Determined by Speiser as *maculata* Lch.

2. "*H. sivae* J. Bigot. Indes orient." 1♀, type. Synonym of *H. variegata* Meg. Determined by Speiser as *maculata* var. *sivae*.

3. "*H. sudanica* ♀ J. Bigot. Soudan, Suakim (sic)" 2♀♀ (each with a puparium), syntypes. Synonym of *H. variegata* Meg. Determined by Speiser as *maculata* var. *aegyptiaca* Mcq.

4. "*H. strutionis* (sic). C. B. Esp." 1♂, 1♀, paratypes (lectotype in British Mus.), each labeled "Mt. Stewart, South Africa, ex *Struthio camelus*", in handwriting presumably by Janson. Determination verified by Speiser. No author's name for the species is given on Bigot's cabinet label.

5. "*H. equinus* (sic) Macq. India." 2♂♂, 1♀, with label "*hippoboscus* (sic) *equinus* Macq." in handwriting by Macquart. No round color label and no Speiser's determination label. Referable to *H. equina* Linn.

6. "*H. albomaculata* Macq. C. Aiguille, Oceanie." 2♀♀, one of them with label "*hippobosca albomaculata* Macq. n. sp." in Macquart's handwriting, thus the lectotype. Determined by Speiser as *H. rufipes* Olf.

7. "*H. camelina* Leach. Afrique." 9 ex amples, one of them labeled "Algerie"; one was verified by Speiser as this species, the remaining 8, determined as *dromedarina* Speis. Actually all are typical *camelina*.

8. "*H. variegata* Fabr. (sic). Tranquebar." 5 ex amples. Verified by Speiser as this species.

9. "*H. maculata* Macq. C. B. Esp. Coll. Serville." 3♂♂, 3♀♀, syntypes. One of the ♀♀ with a label "Caffrarie," but none with Macquart's determination label. Determined correctly by Speiser as *H. rufipes* Olf.

10. [*Stilbometopa impressa* Bigot]. 1♀, "Californie, Lord Walsingham, 4/73", probably not a syntype. With no round color label. Determined by Speiser as this species. This and the next 3 species were not arranged in order when I saw the collection. They may be have been wrongly placed by some later worker.

11. [*Hippobosca equina* Linn.]. 1♂, "Rev. A. E. Eaton.? Algiers." The round color label is blank on the lower side, and there is no Speiser's determination label; hence probably it was not seen by him.

"G. **Olfersia** Leach (sic)"

12. "*O. fuscicornis* ♂ (nec *fuscipennis*) J. Bigot. Colombie." 1♀ (not ♂ as Bigot presumed), type. Generic position verified by Speiser but actually the species belongs to *Ornithomya*. The species was published as *Ornithomyia fuscipennis*, and the placing of this and next species in the collection under *Olfersia* is very perplexing.

13. "*O. parva* Macq. Nov. Granada." 1♀, with determination label "*Ornithomyia parva* Macq." in handwriting by Macquart but probably not a syntype. Wrongly assigned by Speiser to *Stilbometopa* as the antennae in this specimen are abnormal. Actually belonging to *Ornithomya*.

14. "*O. bisulcata* Macq. Chili." 1♂, type, with label "*Olfersia bisulcata* n. sp. Macq." in handwriting by Macquart. Assigned by Speiser to *Pseudolfersia*.

15. "*O. mexicana* Macq. Mexico." 1♀, paratype, with Macquart's handwritten label "*Olfersia mexicana* Macq." Synonym of *O. bisulcata* Mcq. Recognized by Speiser as a distinct species of *Pseudolfersia*.

16. "*O. fusca* Macq. Nov. Granada." 1♂, type, with label "*Olfersia fusca* n. sp." in Macquart's handwriting. Synonym of *Lynchia americana* Lch. Recognized by Speiser as a distinct species of "*Olfersia*."

17. "*O. rufipes* Macq. Insul. Réunion." 1♀, type, with label "*Olfersia rufipes* n. sp. M." in Macquart's handwriting. Synonym of *Pseudolynchia canariensis* Mcq. Recognized by Speiser as a distinct species of "*Lynchia*."

18. "*O. sordida* J. Bigot. Guatemala." 1♂, type. Assigned by Speiser to *Pseudolfersia*.

19. "*O. impressa* J. Bigot. Californie." 1♂, considered by me to be the type. Assigned to *Stilbometopa* by Speiser. The placing of this species and *noumeana* (♯22) under *Olfersia* (in the original description too) is perplexing.

20. "*O. lividicolor* J. Bigot. Brésil." 1♂, type. Synonym of *Pseudolynchia canariensis* Mcq. Recognized by Speiser as a distinct species of "*Lynchia*."

21. "*O. capensis* J. Bigot. Cap. B. Esp." 3♂♂, incl. the type. The original descrip-

tion was said to have been based on 1 single specimen. Synonym of *Pseudolynchia canariensis* Mcq. Recognized by Speiser as a distinct species of "*Lynchia.*"

22. "*O. noumeana* J. Bigot. Nouv. Calédonie." 1♂, type, no host record on labels. Synonym of *Ornithophila metallica* Schin. Determined by Speiser as *Ornitheza andaiensis* Rndn.

23. "*O. erythropsis* J. Bigot. Nouv. Calédonie." 1♂, type. Synonym of *O. aenescens* C. G. Thms. Recognized by Speiser as a distinct species of *Pseudolfersia.*

24. "*O. americana* Wied. Leach. Canada." 1♂, 1♀, composite. The ♂ is referable to *Ornithoctona erythrocephala* Lch. although Speiser determined it as "*Olfersia*" *americana* Lch. The ♀ is a newly emerged example and its wings are whitish. Accordingly Speiser determined it as *Olf. albipennis* Say. Most probably it is referable to *Lynchia nigra* Perty.

25. "*O. rufiventris* J. Bigot. Brésil, Port Alégre." 1♂, 2♀♀ and 1 damaged example (abdomen missing), syntypes. Synonym of *Lynchia americana* Lch. Recognized by Speiser as a distinct species of "*Olfersia.*" Originally described under *Ornithomyia*, rather than *Olfersia.*

"G. **Ornithoica** Rond."

26. "*O. beccariina* Rond. Molucc. Ins." 1♂, 1♀, composite. Misinterpretation. Determination of the ♀ verified by Speiser, but actually it is referable to *O. exilis* Wk. and the ♂, determined by Speiser as *Ornithoica* sp. to *O. stipituri* Schin.

"G. **Ornitomyia** (sic) Latr."

27. [*O. geniculata* Bigot]. 3♀♀ (not of both sexes as assumed by Bigot) without round color labels and specific cabinet label. One of them, the lectotype, with Bigot's handwritten label "*Ornithomyia geniculata* ♂♀/n. sp. Mai 1892...J. Bigot/...Costa Rica" (some of words on the label undecipherable by me) on thin paper and another label by someone else "parasite du *Pharomachrus costaricensis.*" Determined correctly by Speiser as *Stilbometopa nitens* Bigot.

28. "*O. australasiae* Macq. (sic). Austral. N. Caléd." 5♀♀, labeled as of 2♂♂, 3♀♀. Referable to *Ornithoctona plicata* Olf. Determined by Speiser as "*australasiae?*"

29. "*O. plicata* Wied. (sic). Maurit. Insel." 1♂, 2♀♀, with Macquart's determination label "*Ornithomyia plicata* Wied. (sic)". Determined by Speiser as "*plicata?*"

30. "*O. laticornis* Macq. C. B. Esp. ? Coll. Serville." 1♀, lectotype selected by Bequaert, abdomen seriously damaged, with Macquart's handwritten label "*laticornis* Macq." (no generic name given).

31. "*O. erythrocephala* Leach. S. Doming. N. Granada." 5♀♀, composite. Two of these are with Macquart's determination labels as this species; another 2 labeled "Colom. Gaud." Determination verified by Speiser, but one of the 5 is referable to *Stilbometopa ramphastonis* Ferr., the remainder are typical *Ornithoctona erythrocephala.*

32. "*O. laticornis* Macq. Nov. Granada." 1♂, 2♀♀, composite, with Macquart's determination label "*Ornithomyia laticornis* Macq.", but apparently not syntypes, as Nova Granada was not included in the original records. The ♀♀ were correctly determined by Speiser as *Ornithoctona erythrocephala* Lch., whereas the ♂, as "*Stilbometopa* sp." The latter is referable to *S. ramphastonis* Ferr.

33. "*H.* (sic) *testacea* Macq. Col. [Colombie]." 1♀, type, with label "*Ornithomyia testacea* n. sp." in Macquart's handwriting, with no round color label. Synonym of *Ornithoctona fusciventris* Wdm.

34. "*O. columbae.* Java. Coll. Serville." 1♀, with Macquart's determination label "*Ornithomyia columbae.*" No author's name for *columbae* was given by both Macquart and Bigot. Referable to *Ornithoctona plicata* Olf. Determined by Speiser as *Stilbometopa columbae* Wdm.

35. "*O. nigricans* Leach Wied. (sic). Ceylan." 2♀♀. Referable to *Ornithoctona plicata* Olf. Determined by Speiser as *Stilbometopa nigricans* Lch. The "*Stilbometopa*" on Speiser's labels of this and the preceding species may have been wrongly written by Verrall.

36. "*O. fusciventris* ? Wied. Am. Sept." 1♂, 4♀♀. Misinterpretation. Referable to *Ornithoctona erythrocephala* Lch. Determined by Speiser as "*fusciventris* ?"

37. "*O. tasmanensis* Macq. Tasmanie." 4 examples, paratypes (lectotype in Paris Mus.), all heavily coated with mold, probably all ♀♀. Synonym of *O. avicularis* Linn. Determined by Speiser as *nigricornis* Erichs.

38. "*O. atamensis* (sic) Rond. Nouv. Guin. Java." 1♀. Referable to *Ornithoctona plicata* Olf. Determined by Speiser as *hatamensis* Rndn. The word "Java" on the cabinet label was underlined and perhaps this means the specimen came from Java.

39. "*O. parva* Macq. Chili." 5♀♀, labeled as of 3♂♂, 2♀♀. Probably syntypes, although there is no Macquart's determination label. Determined by Speiser as "*Ornithomyia* sp."

40. "*O. variegata* ♂ J. Bigot. Nouv. Zélande." 1♀ (not ♂ as assumed by Bigot), type. Probably synonym of *O. fringillina* Curt. Recognized by Speiser as a distinct species of the genus.

41. "*O. aenescens* ♂ J. Bigot. Nouv. Calédonie." 3♂♂, 2♀♀ (not all ♂♂ as assumed by Bigot), incl. syntypes. The original description mentioned only 3 specimens. Synonym of *Ornithophila metallica* Schin. Determined by Speiser as *andaiensis* Rndn.

42. "*O. nitens* ♂ J. Bigot. Panama." 5♀♀ (not ♂♂ as assumed by Bigot), syntypes, composite. The smallest of these is referable to *Ornithoctona erythrocephala* Lch. and was determined by Speiser as *O. haitiensis* Bigot. Determinations of the remaining ♀♀ were verified by Speiser.

43. "*O. courtilleri* Fairm. (sic)." 1♀, type, with label "*O. spinifera*/*Feronia id.* Leach/*Olfersia courtilleri* Fairmaire. Type/Sur *Tachypetes*/J. Bigot" in Bigot's handwriting on thin paper. Determined correctly by Speiser as *Pseudolfersia spinifera* Lch.

44. "*O. haitiensis* ♀ J. Bigot. Haiti." 1♂, type. Synonym of *Ornithoctona erythrocephala* Lch. Recognized by Speiser as a distinct species of the genus.

45. "*O. kanakorum* ♀. J. Bigot. Nouv. Calédonie." 1♀, type. Synonym of *Ornithoctona plicata* Olf. Recognized as a distinct species by Speiser.

46. "*O. hova* ♀ J. Bigot. Madagascar." 2♀♀, syntypes. Synonym of *Ornithoctona plicata* Olf. Determined by Speiser as the latter species.

47. [*Ornithoctona erythrocephala* Lch.]. 1♀, "Surco Pein", without specific cabinet label and Speiser's determination label. Referable to *Ornithoctona erythrocephala* Lch. This specimen may be either later addition or may have been misplaced by some later worker,

"G. **Lipoptena** Leach (sic)"

48. "*L. mazamae* Rond. *Cervus americanus*. Mexico." 24 ex., glued on paper or mica rectangles. Determination correct. Eight of the specimens each with a round color label and Speiser's determination label "*L. depressa* var. *mexicana* Towns." and one of these 8 bears Bigot' handwritten label "*Melophagus* n. sp. ...1880. J. Bigot." The other 16 specimens lack round color labels and Speiser's determination labels and were probably not seen by him. Meanwhile, 3 of the 24 ex. were off the paper or mica rectangles on the pins and I was unable to find them on the floor of the box.

As mentioned in the introduction to the above list, Bigot's collection of non-European Hippoboscidae contains whole type series of 18 of the 20 nominal species described by himself, as well as types and/or paratypes of 1 species described by Courtiller (*courtilleri*), 1 by Janson (*struthionis*) and 10 by Macquart (*albomaculata, bisulcata, fusca, laticornis, maculata, mexicana, parva, rufipes, tasmanensis, testacea*). As a whole, the arrangement of the genera and species in this collection is far poorer than in that of Rondani's. Obviously Bigot did not take seriously the generic and specific characters and interspecific relationship. Although he (1885) did publish a generic synopsis of the family, it has hardly been used by himself for the arrangement. In 5 cases (♯24, 26, 31, 32, 42), the series were found to be composite, and in another 4 cases (♯12, 13, 25, 43), the species were placed under genera not as that in original descriptions. And in *Ornithoctona erythrocephala* and several other species, specimens of the same species were scattered here and there.

The genera and species of Hippoboscidae in the collection may be re-arranged as follows, according to the nomenclature and sequence of order suggested in this paper. The serial numbers in the above list are appended for easier cross-reference.

Ornithoica exilis Wk. 26 (pt.)—**O. stipituri** Schin. 26 (pt.)

Ornithophila metallica Schin. 22, 41.

Ornithomya avicularia Linn. 37—**O. fringillina** Curt. 40—**O. fuscipennis** Bigot 12—**O. parva** Mcq. 13, 39.

Ornithoctona fusciventris Wdm. 33—**O. laticornis** Mcq. 30—**O. nitens** Bigot 27, 42 (pt.)—**O. erythrocephala** Lch. 24 (pt.), 31 (pt.), 32 (pt.), 36, 42 (pt.), 44, 47—**O. plicata** Olf. 28, 29, 34, 35, 38, 45, 46.

Stilbometopa impressa Bigot 10, 19—**S. ramphastonis** Ferr. 31 (pt.), 32 (pt.).

Lynchia americana Lch. 16, 25—**L. nigra** Perty 24 (pt.).

Pseudolynchia canariensis Mcq. 17, 20, 21.

Olfersia sordida Bigot 18—**O. bisulcata** Mcq. 14, 15—**O. aenescens** C. G. Thms. 23.—**O. spinifera** Lch. 43.

Struthiobosca struthionis Jans. 4.

Hippobosca equina Linn. 5, 11—**H. camelina** Lch. 7—**H. rufipes** Olf. 6, 9—**H. variegata** Meg. 1, 2, 3, 8.

Lipoptena mazamae Rndn. 48.

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